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ABSTRACT

The papers contained in these proceedings from the 1996 Society for Literature and Science Conference are organized into sections based on theme. Some of these themes are: (1) Secularizing Enlightenment; (2) Eugenics and the Politics of Knowledge; (3) Reading the Discourses of Psychology; (4) Women and Medicine; (5) The Rhetoric of Public Health; (6) Cyberpunk and Popular Culture; (7) The Cultural Work of Cognitive Science; (8) Scientist's Lives and Writings; (9) Disease and Literature; (10) Narratives and Epistemology of Science; (11) Print and Its Discontents; (12) The Rhetoric of Science; (13) Complexity and Chaos; (14) Science and Religion; (15) Aspects of Science and Culture; (16) Cultural Studies of Technoscience; (17) Environment and Nature; (18) Science and Opera; (19) Postmodern Poetics; (20) Late 19th Century Science; and (21) Shakespeare Studies. (DDR)

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Society for Literature and Science

1996 Conference

Society for Literature and Science

Sheraton Colony Square Hotel

Atlanta, Georgia

October 11 - 13, 1996

Sponsored by:

Emory University

with additional support from:

Georgia Institute of Technology

Plenary Speakers

Roundtables

Panel Discussions

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1996 Conference
Society for Literature and Science

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Sponsored by:
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1996 Meeting of the Society for Literature and Science

Welcome to the 1996 Annual Meeting of the Society for Literature and Science. This abstract book contains:

- general conference information (this page)
- diagram of meeting rooms
- grids showing meeting times and locations
- detailed schedule/table of contents
- abstracts arranged by session and presented in chronological order (except for those not received in time for inclusion)
- index of participants, titles mentioned in abstracts, and weywords

Meeting Arrangements

Meeting Rooms

All plenary sessions, the six parallel contributed sessions, and refreshment, meal, and reception functions will be held on the Lobby and Ballroom Levels of the Sheraton Colony Square Hotel. The hotel map and room locater grid presented on the following pages will direct you to the various locations.

Registration and Conference Information

The Registration Desk will be in the foyer immediately outside the Grand Ballroom. It will be staffed throughout the meeting to assist with registration and any other conference matters, 4 p.m. - 8:00 p.m. Thursday, Oct. 10; 8:00 a.m. - 5:00 p.m. Friday and Saturday; 9:00 a.m. - noon, Sunday. Messages will be posted here.

Audio-Visual Equipment

Audio-Visual equipment has been provided as requested on your registration form. We suggest that speakers check that the correct equipment has been placed in the proper room, and is operational, in advance of their scheduled talks. Please report problems to the Registration Desk as far in advance as possible.

Dining, attractions, and transportation

Information about restaurants and attractions will be available at the Registration Desk. The hotel adjoins the Colony Square Mall, with options for breakfast, lunch, and dinner, shops, and services. Other dining choices lie within a block of the hotel. MARTA trains to downtown and uptown Atlanta can be boarded at the Arts Center station, a five-minute walk from the hotel. Please note that lunch on Saturday, October 12 is included in the registration fee, and will be served in the Grand Ballroom.

Tours

Information about tours of the Centers for Disease Control and the Yerkes Primate Center will be available at the Registration Desk.

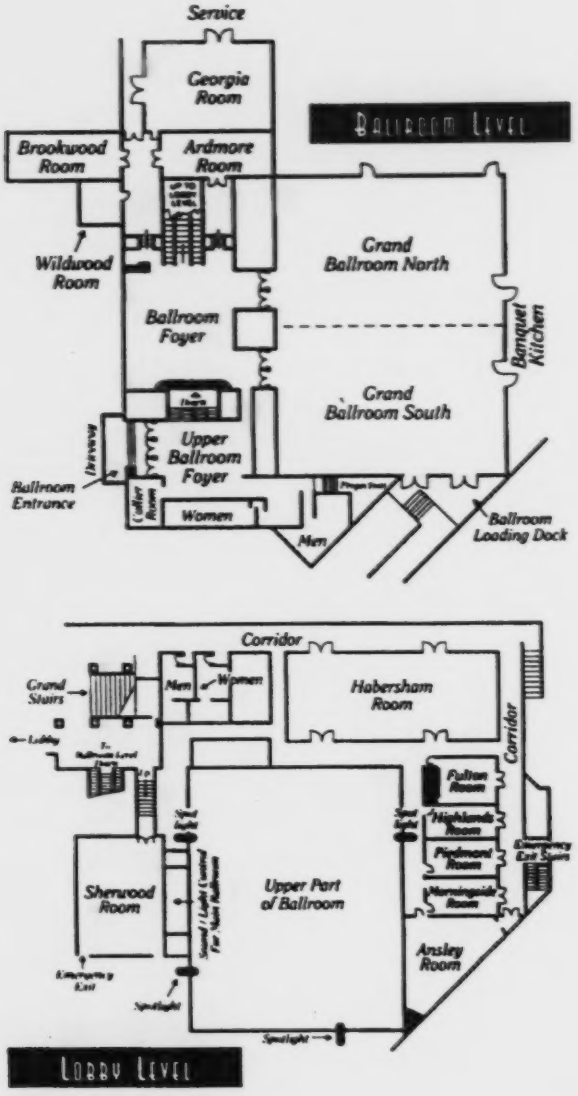
Guidelines for talks and session chairs

We ask that contributed talks be no longer than 12 minutes, and that chairs remind speakers of this limit to ensure ample time for all presentations and discussions in a session. In the event that the chair listed for a given session does not appear by ten minutes after the scheduled time, we ask that the first speaker listed serve as chair.

Book display

A selection of books of interest to SLS members will be displayed for sale in the Collier Room by The Scholar's Choice, and by Duke University Press. We expect these to include recent works by Roald Hoffmann, Paula Treichler, Sidney Perkowitz, and many other contributors to the meeting. A conference discount will be available.

Meeting Room Diagrams, Sheraton Colony Square Hotel



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Meeting Schedule

Time	Thursday, Oct. 10	Friday, Oct. 11	Saturday, Oct. 12	Sunday, Oct. 13
8 am				
8:30				
9:30			Refreshments	
10:00		Refreshments		
10:15				
10:30				
11:30			SLS lunch and business meeting	
11:45				Refreshments
12 noon				
1:00				
1:30				
2:30				
2:45				
3:00				
3:15				
4:00				
4:15		Refreshments		
4: 45			Refreshments	
5:00				
6:15				
6:30				
7:00	Plenary Session			
7:30				
8:00	Reception			
8:30			Reception	
9:00			SLS dancing	

NOTES:
There is a 15-minute break between Session 3, ending at 2:30 pm, and Session 4, beginning at 2:45 pm, that is not shown on the chart.
Registration continues daily.

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Meeting Room Locater

	Thurs. Oct. 10	Fri. Oct. 11	Sat. Oct. 12	Sun. Oct. 13
Registration	Ballroom Foyer	Ballroom Foyer	Ballroom Foyer	Ballroom Foyer
Plenary and reception	Ballroom		Ballroom	
Lunch, business meeting			Ballroom	
Refreshments		Habersham Foyer	Habersham	Habersham
Book display		Collier	Collier	Collier
A topical sessions		Habersham	Ansley	Ansley
B topical sessions		Ardmore	Ardmore	Ardmore
C topical sessions		Brookwood	Brookwood	Brookwood
D topical sessions		Morningside	Fulton	Fulton
E topical sessions		Georgia	Georgia	Georgia
F topical sessions		Piedmont	Piedmont	Piedmont
Wrap-up session				Habersham

Contributed talks are divided into six topical sessions labelled A through F, for each of twelve morning and afternoon time slots on Thursday, Friday, and Saturday. The location of each topical session, for all time slots, is given in the table above.

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Thursday, October 10, 4:00 - 8:00 pm: Registration (*Ballroom Foyer*)

Thursday, October 10, 7:00 - 8:00 pm: Plenary Session (*Ballroom*) [Reception Follows]

Paula Treichler: Will Theorizing About the Social Construction of Aids Help Cure Aids? Top Ten Reasons Alan Sokol Should Have Said Yes

Paula A. Treichler is a professor at the University of Illinois, Urbana Champaign, serving on the faculty of the College of Medicine, the Institute of Communications Research, and the Women's Studies program. She is co-author of a Feminist Dictionary and of Language Gender and Professional Writing: Theoretical Approaches and Guidelines for Non-sexist Usage. She is coeditor of For Alma Mater: Theory and Practice in Feminist Scholarship, Cultural Studies, and The Visible Woman: Imaging Technologies, Gender and Science. Her work on AIDS/HIV has appeared in many journals, including Cultural Studies, October, Art Forum, Science, and Transition, and in many edited collections. Her book on the AIDS epidemic entitled: How to have Theory in an Epidemic: Cultural Chronicles of AIDS is forthcoming from Duke University Press. Her BA is from Antioch College in Philosophy, and her Ph.D. is from the University of Rochester in Psycholinguistics. She has taught visiting seminars at Cornell University, the University of Cincinnati, University of Iowa, Tulane University, and Wooster College. She also teaches an interdisciplinary seminar on medicine and health care in the Campus Honors Program at the University of Illinois.

Friday, October 11, 1996, 8:30 - 10:00 am: Session 1

Session 1A: Secularizing Enlightenment: Readings in Early Modern Literature of Science (*Habersham Room*)

Chair: Kenneth J. Knoespel, Georgia Institute of Technology

Traditional histories of the rise of modern science mark a trajectory by which reason and the principles of rationality take the place of superstition and religion. "Secularizing Enlightenment" aims to interrogate this history- of-ideas narrative through readings of actual early-modern practices, bodies, lives, and non-canonical texts. The texts we discuss--Francis Bacon's The *New Atlantis* (1627), Charles Goodall's *The Royal College of Physicians* (1684) William King's *The Transactioneer* (1700)--all speak to the conditions of possibility for "the new science." We argue that what it means to practice science is in part determined by factors that exceed the history-of-ideas conception of Enlightenment.

Hilary Strang's "Utopianism, Colonialism, Science: Francis Bacon's *The New Atlantis*" thinks through the imbrication of empiricism and colonialism in Bacon's Utopian tract. Samantha Fenno argues, in "Bewitching Quackery: Naturalism and the Rise of Professional Medicine," that while Newtonian naturalism plays a role in the rise of professional medicine, the role involves *faith* in science, rather than reasoning about the science's use in health care. In "Hybrids in the Enlightenment: Bruno Latour and *The Transactioneer*," Angela Todd shows that 'Enlightenment' is full of fissures and resistances, which, when brought to light, necessitate a rethinking of the paradigm of modernity.

Utopianism, Colonialism, Science: Francis Bacon's *The New Atlantis*; Hilary Strang, Carnegie Mellon University

In *The Great Instauration* (1620), Francis Bacon wrote that the aim of his natural philosophy was to give man the tools with which to "conquer nature in action." Such a claim resonates provocatively with the justifications for exploration and colonization in travel writing and political tracts that circulated at the same moment as Bacon's scientific theories. Can a connection be drawn between Bacon's attempts to instanciate an empiricist science in England and England's simultaneous attempts to become a colonial power? This paper will examine the possibility of such a connection as well as the stakes inherent in asking this question.

In *Science in Action* (1987), Bruno Latour suggests just such an entanglement between the scientific project and the colonialist project in the early modem period. Latour writes that in the early modern "the cartographer *dominates* the world . . . The balance of forces between the scientists and the earth has been reversed; cartography has entered the sure path of a science; a center (Europe) has been constituted that begins to make the rest of the world turn around itself." Latour's argument here intersects with postcolonial readings of the imbrication of the discipline of history with European domination, as well as with work such as Michel de Certeau's *The Writing of History* (1988), which traces a genealogy of the practices of ethnography and history to early moments of European colonialism. This paper investigates such claims about the political, ideological and economic work of European knowledge projects, particularly empiricist science, through a close examination of Francis Bacon's *The New Atlantis* (published posthumously, 1627).

The New Atlantis is a utopian tract, and like its predecessor, the *Utopia* of Thomas More (1516), the 'no place' (utopia) in which it is set is described as part of the New World, and, also like More's Utopia, the English men who find the New Atlantis are sailors, on a voyage of colonial exploration. More's Utopia is an attempt to work out English problems in an 'other' space; Bacon's utopic vision may be such an attempt as well. But Bacon's vision is not of an economic utopia but a scientific one, a place in which empiricist experiment and a naturalistic view of the workings of the world are taken for granted as part of everyday life. If More sought a resolution to England's economic problems, the way in which colonialism could provide such a solution is clear. But what is the connection between the colonialist vision of *The New Atlantis* and its argument for natural science? Can arguments about scientific knowledge and domination such as Latour's provide a sufficient explanation for this text? This paper will not argue for a monolithic condemnation of 'science' as colonialist, nor will it attempt to draw any causal relation between empiricism and imperialism. Rather this paper will bring historical specificities of the early modem period, as well as contemporary critique to bear on Bacon's complex text, examining discourses both common to and causing conflict between scientific and colonialist practice.

Bewitching Quackery: Naturalism and the Rise of Professional Medicine; Samantha Fenno, Carnegie Mellon University

In the course of the eighteenth-century, the importance of licensed physicians in England underwent a dramatic shift. Paul Child writes that in late seventeenth-century London, there were only 136 professional doctors available to treat about fifty thousand Londoners (68). The number of licensed physicians increased in the course of the eighteenth-century, so that by the middle of the nineteenth-century, licensed physicians had gained what Dorothy and Roy Porter have called a "quasi-monopolistic control" over the provision of health care (*Patient's Progress* 208-9). Traditional histories of Enlightenment--e.g., those of Louis L. Snyder and Otto Bettman -attempt to account for this shift by claiming that Enlightenment science brought about progress in medicine. However, recent work in the social history of medicine has shown that the idea of progress in medicine was a compelling fiction long before it was an actuality. In *Health For Sale*, Roy Porter points out that of the major fatal diseases, only small Fox found any medical solution before the middle of the nineteenth-century; and it's worth adding that western science appropriated the small pox inoculation from Asian and Turkish practices.

Histories such as Bettman's and Snyder's try to explain the rise of professional medicine in terms of Enlightenment progress, but this explanation loses its force if we accept Porter's claims. We are left with something of a conundrum: why, in the absence of improvements to the field, would professional medicine gain a foothold in eighteenth-century minds? In this paper, I'll offer an explanation of this phenomenon by way of a consideration of narrative strategy in Charles Goodall's *The Royal College of Physicians* (1684). I take it that Goodall's text is representative of late-seventeenth-century Professional ideals. One of Goodall's narrative strategies is to give voice and credibility to the physicians' complaints about quackery. Because he provides a rationale for the College's indictment of quacks, the test is useful for trying to understand the grounds on which--in an age when people of all classes accorded respect to many non-professionals-the non-professionals would be vehemently criticized (and even denied the right to practice) by the College; conversely, the text also helps us understand what it was about professional medicine that managed to gain a foothold. His narrative marks a clear distinction between the quack and the professional, and as such, it provides insight about the physicians' (often unstated) assumptions regarding responsible medical care.

I argue that, by Goodall's lights, the primary distinction between regulars and quacks amounts to a difference in conceptions of how bodies ought to be treated. The licentiates' ideal was that bodies should be treated as machines to be measured and calibrated according to the best-going scientific understandings of the body (e.g., humours theory). Their model for medical responsibility was in keeping with Newtonian naturalism; bodies, like nature, do not in themselves contain meanings, and an understanding of their infirmities is wholly a matter for scientific investigation. Bodies, on this view, become entirely separated from minds, and in this sense the ideals of the physicians are in keeping with a Cartesian mind/body distinction, whereby the mind is--to use John McDowell's term for it--fantasticalized, and the body is understood to be a flat object of nature.

Goodall's case for what makes for a responsible physician hinges upon the caregiver's working within the rubric of a naturalistic conception of bodies; in order to be labeled a physician and not a quack, the caregiver must understand seventeenth-century medical theory and must know -- not only *that* a cure works, but also-- why it works. This, for Goodall, is the fundamental distinction between the responsible and irresponsible caregiver, or, the distinction between the quack and the regular. Quacks, on the other hand, tended to not always be familiar with scientific theories of the body. They treated illness on the basis of their knowing that a cure worked, regardless of whether they had a theory as to why it worked. And they were willing -much to the chagrin of the licentiates--to treat hypochondriacs. What this suggests is that quacks often assumed an internal relationship between minds and bodies.

Once I've argued that Goodall's distinction between quacks and regulars has a basis in the caregiver's relationship to naturalism, I go on to talk about the ways in which this distinction commits Goodall and the College to a form of scientism. Professional medicos--sometimes thinking they did what was best for humanity, and sometimes thinking they did what was best for their wallets -- began to insist that responsible medical care must be carried out under a naturalist rubric; they insisted that *what it is to be responsible* amounts to treating bodies as neutral counters. Goodall claims-- not just that a naturalistic conception of bodies can lead to new information, but--much more strongly, that any other treatment of bodies is unacceptable. These claims to Professional superiority, founded in a rhetorical cohesion between medicine and science, lack empirical justification: there wasn't much medical evidence to back the hope that treating bodies scientifically would lead to better medical practices. (Much later, when medical science did begin to make discoveries that would improve health-care, this attachment would have a justification; but we should be careful about carrying evidence back through time in this way, as it can cause us to miss the physicians' scientistic leap of faith). Professionals gained support for their medical ideals just in virtue of making them out to be like the sorts of ideals that lead to scientific

discovery--that is, by defining medicine in terms of a Cartesian, flattened body, and by defining that body on Newtonian naturalist terms.

While it is beyond the scope of this paper to make any normative claims about contemporary medical practices, I think that the narrative I provide about medicine's early connections to science should at least give us pause when we consider the privilege that's still accorded to scientific medicine over and above holistic approaches to health care that attempt to take the person--and not merely a flattened body --as their object of consideration. Many contemporary holistic medicine books -e.g., those of Deepak Chopra and Christine Northrup - lament that western medicine treats 'only' the body, whereas health involves both body and mind. If this lament points to anything true about western medicine, a genealogy of that truth may well be traced to early medical naturalism such as Goodall's.

Hybrids in the Enlightenment: Bruno Latour and *The Transactioneer*; Angela Todd, Carnegie Mellon University

In *We Have Never Been Modern*, Bruno Latour writes that, modern subjects, by collectively thinking about hybridized social elements through the screen of purification – as problems ontologically located in either the human or the nonhuman -- and translating complex interests into already-formed social elements, have misunderstood both the social and themselves. Latour wants to give attention to the relationship between hybrid forms and purification and to delineate hybrid formations "no longer unofficially and under the table, but officially and in broad daylight. In this desire to bring to light, to incorporate into language, to make public, we continue to identify with the intuition of the Enlightenment. But this intuition has never had the anthropology it deserved" (142). I want to think about what happens if we do, as Latour's theorizing recommends, reread early modern literary productions with an eye to hybrid formations.

My paper uses William King's 1700 *The Transactioneer* as a site in which to unravel the hybridities of new science and Enlightenment's infancy. *The Transactioneer* is a satire on Royal Society secretary Sir Hans Sloane and his publications, *The Philosophical Transactions*. The Introduction to King's text summarizes: "When the Gentleman inquires what Is gained by the discovery that the fossilized tongue of a fish dug up in Maryland resembles one 'taken from the Pastinica Marina, frequent In the *Seas of Jamaica*' (19), he is told that he mistakes the design: it was never intended to advance Natural Knowledge; for who's the wiser for knowing that the Bones of a dead Fish have been dug up, or- where? No, the true use of the Story is to amuse the Ignorant; for If they Talk of things that are out of the way; we presently make an, Harangue about the Mandibilum of a Pastinaca Marina found Fossil in Mary-Land, and then they are silenced at In instant' (19)" introduction, vi).

I want to argue that Enlightenment intuition has not had the anthropology it deserved for a good reason. currently undergoing scrutiny in literary studies and cultural studies, sometimes serving as the social formation that exemplifies domination and sometimes being recuperated as a salvageable rationalism. But Enlightenment is only part of the story. Analysis of *The Transactioneer* will show how, following Latour's prescription of officially mapping hybrids, an anthropology would reveal that the Enlightenment does not hold up as a solid concept. Rather than argue that Enlightenment thinking has brought us the best and brightest, or that Enlightenment as a dominating concept needs to be jettisoned, I will argue that to follow Latour's 's argument and read for hybrids will in turn debunk and problematize Enlightenment.

Literature and Science in Jonathan Dove's Almanacs, 1636-1699; Ryan J. Stark, Texas Christian University

When Galileo famously declared that "this book of nature . . . is written in the language of mathematics," he censured those who read the book of nature in the language of myth, moral drama, and metaphysical conceit. The emerging astronomical paradigm of the early modern period, exemplified by the mathematics of Copernicus, Tycho Brahe, Kepler, Galileo, and then

Newton (among others), shifted conceptions regarding what it was, precisely, that made knowledge of the cosmos knowledge. The epistemological presupposition of the new astronomy, that numbers delivered enlightenment , that the true structure of reality was in fact achieved by isolating and then quantifying phenomena, challenged not only the epistemic validity of astrology, an enterprise based upon the narrative and not the formula of the night sky, but also the epistemic validity of literature as a sound method of characterizing nature's order.

As a specific discussion of the way in which the astronomical revolution reformulated the explanatory power of literature or literary sensibility, this essay surveys Jonathan Dove's intriguing but nearly forgotten collection of works, of almanacs both scientific and literary in nature. Dove, a rhetorical construct of the Cambridge printers, offered a hodgepodge of astronomical, astrological, theological, literary, horticultural, and medicinal observations throughout "his" career. As the Cambridge printers began to understand the epistemic power of the new science, they slowly but drastically restructured Jonathan Dove's almanacs. Over a period of years, as the printers moved from geocentricism and an epistemological confidence in narratives toward a final position of heliocentrism and a confidence in numbers, the printers slowly abandoned their use of a ten-page epic chronology of the world, a powerful literary device which situated Dove rhetorically as an epic poet safeguarding the culture's narrative. The printers dropped the chronology, and a number of other literary sections including poetry written to the seasons, in order to accommodate more scientific prose sections based upon the application of mathematics. In particular, the printers attempted to explain Tycho Brahe's geo-heliocentric model of the universe and Galileo's use of the telescope.

Building upon the work of Keith Thomas, Patrick Curry, Bernard Capp, and Ann Geneva, and others, and informed by two weeks of research at the Bodlian library, this presentation for the Society for Literature and Science offers specific and unique insight into the way in which the new science caused the Cambridge printers to alter their rhetorical use of literary devices in an attempt to appear more credible. This study points directly to the way in which the epistemological undercurrents of the new astronomy banished both astrological and literary accounts of cosmic order to the island of "low science" and superstition. By replacing literary and astrological narratives about cosmic order with mathematical descriptions of cosmic order, the Cambridge printers undermined the epistemic justification for both astrology and literature as sound ways of depicting nature's order.

Session 1B: When Science Turns to Fiction: Post-Humanism, Politics and The Popular (*Ardmore Room*)

Chair: George Levine, Rutgers University
Organizer: Pat Saunders Evans, Rutgers University

Physics, Fiction and the First Atomic Bombs; John Canaday, (Rutgers University)

In 1939, Leo Szilard, a Hungarian-born theoretical physicist, approached Albert Einstein with the news that uranium might be used to make "powerful bombs of a new type" (1). Szilard's intention was to enlist Einstein's help in alerting the United States government to this possibility and the danger that Germany's Nazi government might already be at work on such weapons. Together they drafted a letter addressed to Franklin Roosevelt, who responded by setting up an Advisory Committee on Uranium to investigate the scientists' claims. Six years later, Szilard once again sought to make his voice heard on these issues; this time, however, it was as the author of a petition protesting the impending use of the first, nearly-completed atomic bombs.

Curiously, the circularity of Szilard's role in the development of atomic weapons corresponds to a similarly circular role played by works of fiction. One of the primary influences on Szilard's early efforts to urge the United States to action was a novel by H.G. Wells.

> In 1932, while I was still in Berlin, I read . . . *The World Set Free*. This book was written in 1913, one year before the World War, and in it H.G. Wells describes the discovery of artificial radioactivity and puts it in the year of 1933, the year in which it actually occurred. He then proceeds to describe the liberation of atomic energy on a large scale for industrial purposes, the development of atomic bombs, and a world war which was apparently fought by an alliance of England, France, and perhaps including America, against Germany and Austria, the powers located in the central part of Europe (2). Although on first reading the novel in 1932, Szilard gave little thought to the possibility that this work of fiction might prove relevant to the 'factual' world of physics, the dramatic events of succeeding years soon caused him to think otherwise.

Szilard's response to Wells' novel initially took non-fictional forms: the Einstein letter, countless memoranda, write-ups of his own research, and petitions directed at the U.S. government and its military policy makers. As he met with increasing resistance from the military and political leaders he addressed, and confronted the apparent political naiveté of the scientists most closely involved in the actual construction of nuclear weapons, however, he grew disillusioned about his ability to influence the course of historical events directly. Ultimately, after the war, he turned to fiction himself as a more appropriate and effective medium through which to voice his concerns and shape the world's understanding of nuclear weapons. In 1961, he published a collection of stories, called *The Voice of the Dolphins* (3). In the long title story, he addresses the weapons development that Wells' earlier fiction inspired him to set in motion in the first place.

As these notes suggest, the development of atomic weapons may be read through the fictional works that inspired and responded to them. In addition, the medium of fiction itself must submit to examination through its relation to the historical facts of these weapons. My paper will sketch an outline of this dual analytic approach and its bearing on issues such as the cultural embeddedness of physics and fiction, the fictional representation of scientists and of scientific representations themselves, the status of books and bombs as factual entities, the problems involved in deriving satisfactory aesthetic criteria for fictional works that aim beyond the implicit boundaries of most literature, and the boundaries between fiction and the world it purports to represent.

1. Spencer Weart and Gertrud Weiss Szilard, eds. *Lee Szilard: His Version of the Facts*. (Cambridge: MIT Press, 1978), 95.
2. Ibid., 16. Leo Szilard. *The Voice of the Dolphins*. (New York: Simon and Schuster, 1961).

Love at the end of the line: The Romanticization of the Human; Paula Haines, SUNY - Stonybrook

"Darwin was a good story-teller," opines Van Hoyten, the sinister zoo director in Peter Greenaway's 1986 film *A Zed and Two Naughts*. Indeed, the story he offers, the fantastic tale of biological evolution, has a very satisfying happy ending: humans.

One of the most consistent features of evolutionary narratives, Darwinian and otherwise, has been the placement of Home Sapiens at the end of the evolutionary line, to crown human beings the ultimate result of evolutionary toil. This situation reveals the romantic strain in science, the love of our own, specifically human, subjectivity, and the love of a good story, of a narrative that confirms our experience, our fantasies and our hopes.

The romantic ideal expressed in accounts of biological evolution is laid bare and the premises of the story are complicated in Greenaway's hands. His film pushes the formerly functional, logical narrative structure of evolution, along with the ordered system of language through which that story is told, to the verge of absurdity.

A framework of evolution cannot contain or explain the circumstances which befall Greenaway's main characters, try as they might to use that system to decode the meaning of the events in their lives. Oswald and Oliver, brothers and zoologists, attempt to stretch the narrative, to find ways of interpreting and adapting the story of evolution to come to an understanding of human tragedy (specifically, the freakish, accidental deaths of their two young wives). This attempt is made through their practice of something like what Kuhn called regular science, through observation and game playing, and through word games which try to bend the narrative into a shape which will accommodate their experiences.

As they attempt to adapt the plot of evolution to their personal needs, the scientist-brothers' romantic notions of self and subjectivity become troubled. They encounter situations which cannot be captured by the standard romantic narratives of the biology they employ nor by the selves they believe in, neither of which are adequate to accommodate the sutured selves of Siamese twins, or the joint fathering of a child. In the world of their zoo, the zebra stands in as a marker of the contingencies unaccounted for by stock narratives. It is a riddle the film repeatedly asks: is a zebra a black horse with white stripes, or a white horse with black stripes? It has the possibility of different interpretations, but the explanation must fit a pre- fabricated form: the horse. A Zed and Two Naughts suggests that the zebra may mark a gap between what scientific narratives can explain and the actual expression of a phenotype. It is a missing link.

As the riddle of the zebra resonates alongside the riddle of the human experiences of Oswald and Oliver, another kind of gap is indicated. The missing link in this story may be the one at the end of the great chain of being: the one that suggests unnamed, unrealized possibility beyond the pat, formulaic ending of ultimate human superiority offered by traditional evolutionary narratives.

Paleofiction -- New Kind or Missing Link: Some thoughts on the Theoretical Challenges of Contemporary Paleofiction; Pat Saunders Evans, Rutgers University

Critics have long agreed that science fiction forms what some logicians would call a 'fuzzy set' and indeed much of the most fruitful critical work on the literary mode of science fiction has concentrated on what Gillian Beer has called the 'interchange' approach to the relations between science and literature. Drawing on a study of the critical reception of a small group of imaginative works written by paleontologists, works that Bjorn Kurten terms "paleofictions" ,my paper argues that these works, with their claims to a didactic function for *fictional* narratives in the field of paleontology, represent an interesting limit case for the critical interchange model.(1) Less a missing link between science and literature they appear to be a new kind of text.

I further suggest that it is no accident that it is paleontologists such as Bjorn Kurten, George Gaylord Simpson and Robert Bakker who turn to fiction in order to develop and disseminate particular scientific models of human and nonhuman prehistory. Paleontology, from

the first recognized discoveries of prehistoric fossils and the spectacular mid-nineteenth century Dinosaur exhibits at The Great Exhibition and at Sydenham, has been a science that elicits immediate popular audiences. It has also created and sustained a fascinating sub-genre of science writing in which the scientist presents himself as a communal story-teller and freely combines fictional 'speculation' as well as fictional conventions such as time travel, with the facts of paleontology. What distinguishes contemporary paleofiction from these earlier works in the mode is, I argue, the emergence of a new kind of science writing that turns to fiction outright, thus forming a new place for fiction in the professional practice of paleontology and new challenges for the literary critic.

1. The works I consider are *Dance of the Tiger* by Bjorn Kurten, (Preface by Stephen Jay Gould) *Raptor Red*, by Robert T. Bakker, and *The Dechronization of Sam Magruder* by George Gaylord Simpson (Afterword by Stephen Jay Gould, Introduction by Arthur C. Clarke). I have studied the critical reception of these works in both science and humanities reviews and review articles.

TBA; John Johnston, Emory University

Title and abstract unavailable

Session 1C: Eugenics and The Politics of Scientific Knowledge [Roundtable Discussion] (*Brookwood Room*)

Chair: Richard Grusin, Georgia Institute of Technology
Coordinator: Howard Horwitz, University of Utah

Participants:

- Howard Horwitz; University of Utah
- George Levine; Rutgers University
- Christopher Herbert; Northwestern University

One key focus among those who perform cultural analyses of literature and of science is the social operation of aesthetic practice and of scientific knowledge claims. What effects do aesthetic performances have upon audiences who experience them personally or through public discussion of them? In the case of science, what effects do scientific claims have in social arenas extending beyond the boundaries of laboratories, classrooms, and scientific organizations? Perhaps more important, how do scientific claims exercise these effects? What foundation do scientists claim for their practices and results? Why are scientific claims respected by non-scientific members of a population, even when the force of these claims, and perhaps their substance as well, is transformed or distorted as they are absorbed into the larger culture?

This proposed session will examine such questions in a historically specific instance: eugenics in the early twentieth century. Eugenics in this period may well be the exemplary (if perhaps hyperbolic) instance of science exerting influence over social practice and policy. In eugenics, the science of heredity (race science), the formal logic of mathematics (statistics), and evolutionary science merged in an explicit attempt to influence practices and policies regarding education, labor laws, marriage laws, and medical practice (especially concerning birth control and abortion). Since eugenics's social mission was its *raison d'etre* as science, it is impossible to disentangle eugenist science from eugenist politics.

The presentations composing this session will examine the logical and rhetorical transits by which eugenics promulgated its scientific (and hence sociological) claims. But this session will also expand the question of the politics of scientific knowledge to include its aesthetic dimension. Eugenics, after all, was foremost an enterprise in representation. Karl Pearson, first director of the Sir Francis Galton Eugenics Laboratory at the University of London, explained that the inheritance of physical traits--height, physiognomy, complexion, etc.--is visible and therefore to some extent calculable (especially after the recovery of Mendel's work). But to be social practice--to justify its existence--eugenics must gauge "the inheritance of the mental and moral qualities in man," are this is not visible. Eugenists, therefore, had to devise representational means-foremost its charts and graphs--to link visible corporeal features to mental qualities and to represent the mechanism and probability of their hereditary transmission. Consequently, as eugenist science is inseparable from its political aspirations, so both it science and politics are inseparable from its aesthetics--it assumptions about the linkage of material features to immaterial capacities and its assumptions about how to represent any such linkage.

In "The Logic of Eugenics," Howard Horwitz will examine the paradoxical nature of eugenics's scientific claims and of the troubled relation between its political claims and its aesthetics. A main of goal of "National Eugenics" was to maintain clear (social and racial) distinctions between the "supernormals" and the "subnormals" (generally, the rich and poor) by delimiting breeding among the working-classes and by encouraging or even mandating proliferate breeding among the middle-classes. Yet the eugenists' very vision of science often obstructed their attempts to manage social policy.

Pearson, especially, was cautious in his statistical analysis. In lectures to numerous local clubs and societies, Pearson often employs statistical analysis to challenge conclusions by others

about the inheritability of "mental qualities"--criminal behavior, altruism, alcoholism, moral qualities in general. Physiognomy, it turns out, is not a predictor of such traits; nor, he concludes, can these traits be identified through personal interviews. At each stage, then, the means of measuring mental traits, not to mention their transmission, become increasingly abstract and remote from concrete markers, until the eugenist project to represent that which is invisible admittedly falters.

In the face of this logical and statistical dilemma, however, the eugenists become all the more aggressive rhetorically, insisting that National Eugenics is necessary to discover precisely those transits between visible and invisible phenomena which their scientific methods keep proving elusive. The same paradox exists in other aspects of the eugenist program: in the curious relation in eugenics between the influence of heredity and nurture, and between the individual specimen and the group or family to which it belongs. These related paradoxes become especially evident when British eugenists chastise their American counterparts for being unduly sanguine about matings between the "weak" and the "strong."

The main consequence of these paradoxes, for Horwitz as for Pearson, is that even in the case of eugenics, which was dedicated to the idea that social policy should follow directly from scientific premises and results, the linkage is tenuous at best; the politics of eugenics are 1) not linked linearly to it scientific program, and 2) either precede the science or are overlaid upon it. George Levine will extend these considerations in broader terms in his presentation, "Science and Citizenship: Karl Pearson and the Ethics of Epistemology." Levine will focus on the so-called objectivity of scientific claims to knowledge in this period, the era of positivism.

Levine's argument is twofold. First, Pearson's positivism (both influential and typical) never purports to measure its phenomena of study in any way that could literally be called objective. That is, Pearson never claims (and even derides the idea) that a scientific investigator can have, in a Cartesian model, any direct contact with phenomena of study; moreover, no scientific representation of those phenomena can produce likenesses of those phenomena. Pearson understands the scientific method to be one of "correlation," whereby conclusions are arrived at by correlating one figure to a second figure, this second to a third, the third to a fourth, and so on. Correlation is Pearson's positive definition of objectivity, but correlation is circuitous rather than direct, which we might assume objectivity must be.

The second facet of Levine's argument concerns the consequences of Pearson's correlative notion of objectivity. If scientific knowledge is not direct in a Cartesian sense, then its Premises and conclusions are, of course, already bound up with the social values which science is often claimed to precede and provide the foundation for. If Pearson's vision involves idealism, Levine suggests, more important is that the inseparability of scientific claims from the values they are meant to herald does not compromise the social operation of science. Instead, the entanglement of scientific claims with prior social values is precisely how, for Pearson, science forms the basis of citizenship. In learning, or in following, the dictates of science, its audience is learning the procedures and attendant values that define the citizen. If correlation is circuitous, it is therefore the mechanism of proper citizenship.

Christopher Herbert will comment on these papers. Too often, time constraints force respondents on panels to hurry their remarks, identifying a few details for discussion just as time for discussion is running out. The size of this panel means that Herbert will be able to provide a full response to details of the two papers and also to the general issues raised by them. Herbert is well qualified to do so. His work, as in *Culture and Ethnographic Imagination in the Nineteenth Century* (Chicago UP, 1991), has consistently examined the rhetorical underpinnings of scientific enterprises, the social operation of literary work, and the relations between the two discursive arenas. Recently Herbert has been examining the evolution of what he calls anthropomorphism in nineteenth-century science, which work includes some focus on Pearson. The format of this session will permit Herbert to examine in his own terms the historical questions raised by the two papers and perhaps expand the definition and scope of the issues raised by the two more particular

papers. Herbert will be a full participant rather than the afterthought that the respondent too often turns out to be.

Session 1D: Reading the Discourses of Psychology: Brain Research to Psychoanalysis (*Morningside Room*)

Organizers: Nancy A. Barta Smith, Slippery Rock University and Sarah Stein, University of Iowa

Landmarks and Proximal Senses/Mental Maps and Spatial Orientation: The Broad View and The Amazing Maze of Spatial Configurations in Brain Research; Nancy A. Barta Smith, Slippery Rock University

In the ABC special "Boys and Girls are Different: Men, Women and The Sex Difference" aired last year John Stoessel told listeners how feminists have brainwashed older children to solemnly pronounce the equality of the sexes but that younger children unmask this fiction--both with their own behavior and in their intuitive understanding of the differences between boys and girls even in the 90s. Young children proclaim what every nonsexist parent has also been forced to admit--that not only the bodies, but the preferences, thoughts and behavior of members of the opposite sex differ, in spite of our desire to ignore this fact and, apparently, in spite of other brain research uncovering the evolution of the brain and its continuing plasticity after birth and into old age.

The show's extolling of women's greater immobility (she sits earlier) and more finely attuned "proximal senses" (alertness to *visual* cues, ability to read *faces* and moods, and remember nearby *objects* and their *positions*) in contrast to male target orientation (he crawls away sooner) and manipulation of objects in three dimensional space is the most recent in a maze of interpretations of brain and gender research further confused by the way that vision stands both for embodied place and mental space. I will suggest it is related as well to the more generalized displacement of visual perception by motor operations in Piaget's developmental psychology and throughout an Academy intent on intellectual pursuit.

Brain size and weight, and brain weight in proportion to body weight, have given way to studies of hemispheric specialization and laterality. In these new interpretations, oddly enough, women have been found more verbal and analytic, processing items piecemeal in contrast to the visual (holistic, spatial and simultaneous) processing of males. Ancient accounts of women as holistic and intuitive in contrast to male logic and analysis have been turned on their heads, but always with the same result--to restrict the sphere of women's influence, preventing their insights to reconceptualize the generalized relationship of place, space and time in the Academy.

Judith Geneva speculates that perhaps this has occurred because it is logical and analytic thought that can be simulated by computers. Internal cyberspace must be preserved in the marriage of man and machine. It is now poetic spatial and holistic thinking that has the broadest range, is creative, marks genius, and is needed even for scientific and mathematical excellence. It is women's bilateral brain that contaminates spatialization spared in males, contracting the range and depth of her thought.

Setting aside the question of the validity of research in different brain structure and processing, I will look at what happens to the idea of space and place itself in the recent battle over mental turf--that is when manipulation in three-dimensional *space* and target *orientation* while blindfolded can stand for visual and spatial competence. For Merleau-Ponty Gestalt theory was tied to early stages of Piaget's cognitive psychology surpassed in the adult. Though he resisted this developmental progress in Piaget's work, the figure /ground structure came to stand for the experience of being with/in the world as well as the relation to others still associated with women in most recent brain research.

Looking at the rhetoric of space and place in scientific studies and articles in *Scientific American* on brain research, this paper will attempt to make the case that embedded simultaneous experience and the proximity to world and others Merleau-Ponty associated with visual perception have nowhere to go in a tradition where place is space (world *of ideas*) and time place (earthly pursuits). This denies the importance of visual capacities of women at the same time their greater

attentiveness to world and others is reasserted. This tradition of Being and Time itself is a by-product of the emphasis on causality in explanatory discourses. Experimental methods in research projects, as well, impose a temporal "logic" on perceptual abilities (making them questions of visual acuity and perceptual speed) at the same time they affirm a spatial logic in temporal abilities (target orientation and spatial manipulation).

Recognizing "spatial abilities" as tied to movement and operational processes reveals their physical connection to motor operations in Piaget and their logical connection to the rule driven causal force of the justice ethic (imposing a rationale from behind) also associated with later development in Piaget's theory. At the same time this recognition of "space" as time makes room, as Carol Gilligan does, for the primacy of visual perception in those whose work is tied to the broad ground of being with/in the world, as well as the near ground of proximity to others. Proximal senses focused on small details and the near-at-hand are shown to be only part of a wider vision that includes simultaneous and holistic embeddedness in place and world. Spatial orientation is shown to be primarily a temporal way of thinking that gives primacy to vision only in so far as it has been incorporated into operational and manipulatory structures that emphasize individual, direction, and aim, not global vision.

The Broad View and Popular Science: Using the Energy Generated in Brain Research to Fuel Cultural Debates; Sarah Stein, University of Iowa

With the background provided by the first presentation's discovery of the colonizing of place and world by space and time in brain research, Sarah Stein will turn her expertise in documentary film making and media criticism to popularizations of recent brain research as they appear in print media such as *Time* and *Newsweek* as well as in the ABC special "Boys and Girls are Different: Men, Women and The Sex Difference" itself. Through film clips and analysis she will show how the powerful controversy over brain research is mobilized. It sells magazines and air time. It fuels cultural debate about affirmative action, between so-called gender and equity feminists, and--in a conservative climate--among and between members of the Christian Right and Liberal Left.

In asserting the potential danger of ignoring differences in mental abilities and processes, Stoessel notes the senseless and hurtful effort to eradicate differences present at birth, the fictional wickedness of at least some forms of "sexism," and the absurdity of expecting 50/50 representation of the sexes in all job categories. He notes how "some people," graphically represented by angry feminists, don't want to hear what not only common sense but the research clearly shows--that equal choice and opportunity not similarity is what gender equity should be about. At the same time, the portrayal of research results in the TV special undercut choice by perpetuating representations of women's capacities that disparage the importance of perceptual abilities beyond a narrow domestic sphere with trivial exercises in memorizing objects that have little significance or purpose. Men, in contrast, find their way blind folded in subterranean tunnels where women get lost.

Moreover, biological differences remain "hard-wired" even as Stoessel talks of their evolutionary history and notes that, on the day of his observations, all the children did not respond as expected in gender-specific experiments. Finally, it is women with congenital abnormalities (congenital adrenal hyperplasia or CAH) caused by exposure to testosterone who all their lives have "felt different" and excelled at activities traditionally coded masculine, neatly bringing them in line with irascible cuts of "radical" feminists. Thus brain research enters the terrain of competing cultural forces that seem the condition or state of the world, but once again reduce it to time and our distance from each other.

The Subject of National Discourse: Cultures, Carriers, and the Freudian Unconscious; Priscilla Wald, University of Washington

This talk begins with a disjunctive analogy in Freud's 1915 essay on the unconscious in which he compares ambiguous "unconscious instinctive impulses" that "qualitatively...belong to the system

Pcs., but factually to the Ucs." to "individuals of mixed race, who, taken all round, resemble white men, but who betray their coloured descent by some striking feature or other, and on that account are excluded from society and enjoy none of the privileges of white people." This analogy is difficult to grasp; it turns on the ambiguity of classification in both cases but otherwise seems oddly unmatched. In this talk, I shall unpack the analogy as I establish the importance of both terms, and of the racializing and gendering of putatively "neutral" scientific terms, to an exploration of the use of science in modern western nationalisms.

This talk comes out of a larger project, currently underway, in which I consider the use of scientific technologies and terminologies to rationalize the anxieties intrinsic to cultural discourses of kinship and genealogy. In that work, I argue that contemporary discussions of genetic disease (part of what I term "carrier narratives") substantiate vaguer anxieties associated with questions of descent, and that earlier in the century race fulfilled the same function as genetics does now. Since those terms are part of the "scientizing" (and rationalizing) of cultural anxieties, it is not surprising that breakdowns in conversations between scientists and humanities scholars frequently take place around the issue of identity (particularly the "meaning" of the genetic and racial composition of human beings).

In this talk, I shall consider the particular language of human relations associated with what Benedict Anderson has called "the imagined community"--that is, modern western nationalisms. The focus of this talk is the centrality of two concepts--race and the unconscious (of Freud's essay)--to a formulation of subjectivity as a kinship relation within the imagined community. I will look at Freud's 1915 essay on the unconscious and at two short stories written in the early twentieth-century US, Kate Chopin's "Desiree's Baby" and Alice Dunbar-Nelson's "Sister Josepha." Demonstrating how all three are "carrier narratives"--narratives, that is, about how biological (and cultural) traits are "carried" and passed along to mark family relations--I will explore the connection between the dangers of racial taint and cultural disintegration. I am interested, in this essay, both in how literary works and works that lay claim to scientific authority differently represent the point at which science can no longer effectively mask certain cultural fictions, and in how these works differently manage that breakdown.

Session 1E: Women and Medicine (*Georgia Room*)

Chair: Linda Saladin, Florida Sate Univeristy

Medical and Dramatic Narrative Texts in the Performance of Breast Cancer; Rhona Justice-Malloy, Central Michigan University

Perhaps no other disease summons the kind of dread in women than that evoked by even the mention of breast cancer. The removal of a breast is generally agreed to be one of the most traumatic experiences a woman can endure. While the image of the healthy breast is informed by the workings of culture, our understanding of the cancer that destroys the healthy breast is often narrowly prescribed by the abstract, universalizing texts of medicine. Through the texts of medical description a disease such as breast cancer becomes part of a cultural enthymeme. However, there is another, seemingly incompatible narrative text that contributes to this enthymeme as well. This is the personal, dramatic narrative of those who have experienced the disease and have developed their narratives into performance events. This paper will examine how the universalizing narratives of medicine and the localizing narratives of personal experience may be braided together through performance to form a cultural enthymeme on the nature of disease, in this case, breast cancer.

Between the authoritative medical narrative of disease and the personal narrative of a woman actually experiencing a disease there is a narrative conflict. While the personal narrative is corporeal and individual in the truest sense, the medical narrative seems to belong to no one and to no one body. It is rather omniscient, omnipotent, and omnipresent. I will argue that the dramatization of the personal narrative of disease is a kind of troping in which the anonymous authority of medical narrative and the individual testimony of personal narrative are braided together as a form of public cognosis. Together these narratives become visible, tangible, and recognizable.

I will examine dramatic texts such as Susan Miller's *My Left Breast*, Linda Park Fuller's *A Clean Breast of It*, and Brandyn Barbara Artis' *Sister, Girl*, as well as medical texts such as the Interactive Multimedia CD ROM *Understanding Breast Cancer* to show how medical texts create markers or cues in their narratives that instruct physicians and patients alike to recognize disease. These markers are then braided, through medical and personal narratives into performances which become an interstructed component of the cultural enthymeme of a particular disease or group of diseases.

Science and Dramatic Literature: A Commonality of Thought; August W. Staub, University of Georgia

In the general mind, and indeed in the mind of many persons of science and of literature, the split between science and the arts is obvious and complete. The one is not the other. While literature and the other arts may use science as a focus, science as procedure is by definition different from art. To others, including myself, the division is not at all clear. There are superficial distinctions, of course, but theses do not obviate more fundamental similarities. My interest is in one such fundamental similarity: both science and literature represent the public thought processes of cultural units. Nowhere is this phenomenon more apparent than in the ways in which science and dramatic literature are structured for specific performance. To my mind, it is no accident that Einstein first published his theories on relativity the same year that Strindberg produced *The Ghost Sonata*, the Western world's first relativistic drama.

In his *Rhetoric*, Aristotle proposes a public thought process -- different from private, psychological processes and equally different from formal syllogism. This public or popular thought he calls the enthymeme. It is the basic suasive process to be employed when encouraging groups to

"think with" the rhetor. It will be my contention that both science and dramatic literature are enthymemic.

Aristotle nowhere gives a definition of the enthymeme, but he identifies it with those figures of speech than employ thought as helix as opposed to thought as syllogism: metaphor, metonymy, simile, analogy. Indeed, it is Aristotle's powerful insight to understand that public thought does not arrive at conclusions linearly, but by braiding ideas together. What makes this thought especially public is that the braiding depends upon a given culture's concept of what is "braidable". For example, those cultures which do not know the lion, can not twist together Richard's heart and the lion. It is in such a shared community of experience that both science and literature exist.

Western dramatic literature is dependent upon the turn-around, the twist, the troping of experience. It interlocks publicly the experiences of a shared culture in such a manner that thought takes place, and conclusions (catharsis?) are drawn. Western science is also tropic, dependent on turn about thinking. My paper will explore several examples of the shared tropic nature of scientific and dramatic thought.

"Let's Eat Meat!": Sexual Cyborgs and the Politics of Breast Cancer in Jane Smiley's *A Thousand Acres*; Desiree Hellegers, Washington State University - Vancouver

Jane Smiley's *A Thousand Acres* offers an ecofeminist critique of the role that androcentric biases have played in shaping women's health care and in masking the role that environmental degradation and chemical contaminants in particular are increasingly playing in transforming the human body. The silence that shrouds the victims of breast cancer in the novel marks Smiley's sympathy with breast cancer activists who have in recent years become increasingly vocal about the failure of the cancer establishment to address the alarming rise of incidents of breast cancer in the United States. The probability of a woman contracting breast cancer has risen from a one in twenty chance in 1940 to a one in eight chance today in most areas of the country, with higher rates in Long Island, the San Francisco Bay Area, Chicago and Washington. The novel critiques the role that misogynist ideology played in popularizing the Halsted mastectomy, dubbed one of the "greatest standardized surgical errors of the twentieth century"; the novel also offers a broader commentary on the role that corporate interests and government corruption have played in shaping the research agenda of the cancer establishment and in deflecting attention from the environmental link to breast cancer.

Reflecting the postmodern impulse in ecofeminist theory, the novel explores the historical link between the exploitation of women and nature, while it persistently challenges essentializing claims to women's epistemological, moral and environmental innocence. At the same time, it implicitly provides a cautionary note on the productive limits of the postmodern emphasis on difference for ecofeminism. The novel argues for academic ecofeminists to begin theorizing from the models of collective resistance that are already being used in communities throughout the country to address the threats that industrial chemicals pose to the material bodies of women, children and men.

Occupational Hazards: Discussions of Disease in Early 20th-Century American Prostitutes' Autobiographies; Geralyn Strecker, Ball State University

The years between the end of the Civil War and the outbreak of World War I were the heyday for prostitution in the United States. Hundreds of thousands of women across the country were walking the streets, working in brothels, or living as kept mistresses. In response to widespread prostitution and the epidemics of venereal diseases which accompanied it, reformers were in an uproar and began forming social purity campaigns, censorship groups, and vice commissions to cure "the social evil." As World War I broke out in Europe, U.S. military officials feared that venereal diseases would cripple our armed forces and lead to strategic losses if we went to war. Toward off such catastrophe, the U.S. Department of the Navy called for an immediate ban of

prostitution within a five-mile radius of any military establishment. As a result, infamous vice districts like Storyville in New Orleans and San Francisco's Tenderloin were closed down.

Most of what has been written about venereal and other diseases associated with prostitution at that time has focused on threats to the military or the infection of Johns' innocent wives and children. In this paper, I will look at the situation from the prostitutes' perspectives. After their houses were put out of business during World War I, several madams and/or prostitutes wrote and published their autobiographies as a way to make money. Disease is a major issue in this intriguing body of literature.

Diseases, especially venereal diseases, affected prostitutes' lives in many ways. Becoming infected with syphilis or gonorrhea seriously jeopardized a girl's career. High-class bordellos would not keep infected girls, so these women sunk lower and lower in the types of customers they could attract. Even if viable cures had been available, most prostitutes could not have afforded them. Besides the initial costs for doctors and medicines, most "cures" required a lengthy stay at an expensive women's hospital, or at the very least several months of vacation from work. Hence, only the most affluent courtesans and call girls sought "cures," while the poor futilely placed their faith in vinegar douches to prevent disease. Madams such as Chicago's Everleigh sisters might provide regular check-ups for their girls--a form of health insurance. Madams did this not out of concern for their girls, so much as to keep the best class of customers. Socially important men could not afford to have their recreational habits exposed to public ridicule by a dose of the clap.

In addition to venereal diseases, prostitutes' autobiographies also include discussions of tuberculosis. Women who survived their careers and lived into their 40s and 50s almost always report of suffering diseases of the womb--what today would probably be diagnosed as pelvic inflammatory disease (PID) or cancers of the cervix or other reproductive organs.

Some of the women whose autobiographical writings I will cite include "Madeline," Nell Kimball, and Mamie Pinzer. I will also cite biographies about Cora Crane and Belie Brezing. I will compare the "science" of these writings to medical texts, sex manuals, and social purity literature written at the turn of the century.

Session 1F: Rhetoric of Public Health (*Piedmont Room*)

Chair: Angela Wall, University of Wisconsin - Milwaukee

Risky Business: Actuarial Calculus in Anti-Smoking Campaigns; Roddey Reid, University of California - San Diego

Abstract not available

Healthy Language, Healthy Bodies, and the Healthy Society: Medical and Linguistic Discourse in Nineteenth-Century America; Pam Hardman, Western Washington University

Debates about language spread rapidly throughout the post-war decades of nineteenth-century America. Various writers argued from seemingly diverse perspectives about "good American English," and these arguments reflected social anxieties about immigration, industrialism, and shifting definitions of race, class and gender. These writers all addressed what Brander Matthews called "the healthy development of our mother tongue," although they disagreed on just what constituted such healthy growth. At the same time that these linguistic controversies were circulating, medical controversies concerning natural health, the ideal body, and proper medical intervention also appeared frequently in the American popular press, home health manuals, and professional medical texts. Linguistic debates echoed these medical debates; the same questions were asked about the language and the human body: Was it ruled by natural and organic or artificial and mechanical laws? Who had the authority to regulate these laws? Was it evolving or degenerating? Was the ideal controlled and orderly or unpredictable and lawless? To what extent should humans intervene in natural tendencies? Were there innate differences in the ways the sexes, classes, and races developed linguistically and physically?

My paper looks at the works of such people as Brander Matthews, Richard Grant White, William Dean Howells, Charlotte Perkins Gihman, Oliver Wendell Holmes and S. Weir Mitchell, in addition to various writings from popular magazines and health manuals. I explore how medical and linguistic theories were used to articulate a broader social ideology that naturalized and reinforced certain racial, economic, class and gender roles. Linguistic, literary, and medical discourses constructed types of texts and bodies essential to a capitalistic culture based on the genetic racial superiority of white males.

From Heart to Head: Mapping Health onto the Body Politic; Stephanie Tripp, University of Florida

Medical historians often mark the seventeenth century as the site of a great shift from a "qualitative and vitalistic view of the world and life" derived from the ancient Greeks to the "mechanical and quantitative" view of life held by Newton and other founders of the new science. While the image of the healthy body as a favorable mixture of vital humors accommodated the popular Christian belief that health is controlled by God, the Newtonian image of the healthy body as a properly functioning machine foregrounded the possibility of human intervention. The new science, replete with technologies of observation informed by the invention of the microscope and the telescope, provided Western Europe with the means to re-calibrate its view of health from the singular spectacle of the Christian body to the multiple, yet uniform, components and systems of the Body Politic. I wish to trace the ways in which some seventeenth-century texts, particularly William Harvey's *Movement of the Heart and Blood in Animals* and Thomas Hobbes's *Leviathan*, mediate between claims of divine will and human control as they map health onto the Body Politic.

I choose to view seventeenth-century England not as a threshold between an epoch of health practices guided by religious teachings and an epoch of health practices informed by the new science, but as a period during which individual and collective bodies become sites of

negotiation among an increasing number of discourses on health. In this way, the movement toward the "anatamo-clinical gaze" culminating in the late eighteenth century resembles what Foucault describes as a shift from the "right of death" to the "power over life." Rather than depending on a victory of new over old, science over religion, the power over life operates through a proliferation of networks and connections. These connections, like Bruno Latour's "monstrous hybrids," are rendered invisible by a discourse of historical epochs and epistemological breaks. The result is a sense of incommensurability that paralyzes attempts to examine things and events across the borders of science, society, and language. In our own time, when the fully mechanized Body Politic defines health in terms of the impenetrability of its surfaces, as evidenced by the analogy between the human immune system and a fortress, it is crucial to recognize the hybrids lurking among us and to call for their materialization. Exploring new possibilities for healthy bodies is more important than ever in a time when the health of bodies is subject to the health policies of the Body Politic.

keywords: health, body politic, hybrids, seventeenth century

Friday, October 11, 10:00 - 10:30 am: Refreshments (*Habersham Foyer*)

Friday, October 11, 10:30 - 12:00 noon: Session 2

Session 2A: Enlightenment Perspectives on Science (*Habersham Room*)

Chair: Cheryl Lambert, Brigham Young University

Invisible Hand and Mechanical Vortex: Adam Smith and the Imagination of Science; Eleanor Courtemanche, Cornell University

The economic model Adam Smith describes in the *Wealth of Nations* is often compared to the Newtonian system of gravitation, with its emphasis on a single connecting principle--and the "Invisible hand" there described, as a natural force of attraction and harmony, bears some relation to Newton's *actio in distans*. But it can be argued that Smith actually preferred the outmoded system of Cartesian physics which Newton's theories replaced. Smith's "History of Astronomy" (an essay written before 1758 but not published until after his death in 1790) represents the development of physics in terms of the imagination's power to create "invisible chains" between the disjointed phenomena of experience. When these phenomena are convincingly connected by "philosophy," the imagination can pass "insensibly" along these chains, and contemplate the whole as a smoothly harmonious unity. Descartes' theory of vortices-which explains motion by the eddying of a space-filling ether--is perhaps the most satisfying of these theories, since it fills in all the "gaps"-not only the troublesome gaps between events which the imagination seeks to repair, but more literally, the void itself, which is filled with ether at every point. Newton's system may explain the facts more coherently, but the gap it seems to leave between cause and effect (since gravity does not operate by means of adjacent material particles pushing each other) is disturbing to the imagination.

Smith's characterization here of the philosophical system as an "imaginary machine" is reflected in his later economic theories as well. His description of capitalism, which brings together a materialistic social causality ("self-interest") and the mysterious harmonizing agency of the invisible hand," has much in common with earlier Enlightenment models of the natural world, with their attempt to harmonize mechanical and divine causality. But in combining materialistic, moral anarchy on the individual, "micro" level with a providential explanation on the "macro," systemic level, Smith was threatened with just the kind of "gap" between cause and effect, between the motion of the part and of the whole, which the Cartesian scientific imagination abhors. His solution, the invisible hand, is one of those connecting principles which makes it possible to imagine a scientific system as a unified whole. It intervenes *between* cause and effect, preserving human free will while merely harmonizing the effects of their actions, to create a benefit for the populace "as a whole." The task of the invisible hand is thus primarily an aesthetic one: to smooth over the disparities and "gaps" created by capitalism, by creating the image of a self-consistent, mechanically driven, holistic system--and thus to found economics as a "rational" science, by disguising the role played by speculative imagination at its origin.

Literature and Medicine in Late Eighteenth-Century France: Sensibility, Anthropology, and Complementarianism in Laclos & Sade; Anne C. Vila, University of Wisconsin - Madision

Despite their obvious differences in style and purpose, the late eighteenth-century French libertine novel and contemporary medical discourse had some profound interconnections, especially in the complementarian approach they took to the subjects of sex, sensibility, moral nature, and organic constitution. This complementarian perspective, according to which "male" and "female" were perceived as fixed positions in a medically-based hierarchy of human types, is usually associated by historians with the doctrine of moral anthropology that Pierre Roussel expounded in his landmark treatise *Système physique et moral de la femme* (1775). Yet it also pervaded the so-called

philosophical novel of the day, particularly as practiced by Pierre-Ambroise François Choderlos de Laclos, author of the masterful epistolary fiction *Les Liaisons dangereuses* (1782), and Donatien Alphonse François de Sade. Laclos, a self-styled moralist and disciple of Jean-Jacques Rousseau, was less overtly libertine than Sade in his philosophy. Laclos nonetheless shared with Sade a cynical view of traditional morality and social institutions, as well as a particular vision of himself as a novelist: each characterized novel-writing as an enterprise akin to doing natural philosophy, and deployed the novel as a means of exploring the physical, moral, and intellectual implications of sensibility in various types of human beings.

In that sense, the discourse on sensibility contained in the writings of these novelists was deeply resonant with the ideas on the property that were then circulating in medical discourse--even though they standardly put their commentaries on sensibility in the mouths of "monstrous" characters whose views on society and nature were radically subversive of mainstream Enlightenment thinking. The complementarian philosophy reflected by their fictions often follows the lines of Dr. Roussel's medico-moral doctrine, but Laclos and Sade did not necessarily use that philosophy to support the sexual oppositions central to moral anthropology. Rather, they deployed complementarianism to serve two, somewhat contradictory ends: they simultaneously typologized the human race by dividing it into irreconcilably opposing camps, and created libertine characters of both sexes who insisted on their own individual complexity and exception. The determinism that imbues the novels of Laclos and Sade is thus bimorphic in itself, for reasons that have less to do, ultimately, with gender, class, psychology, or conventional social dictates (as various critics have emphasized) than with the physicomoral distinctions implicit to libertine philosophy--a vision of human nature that both authors derived, in part, from contemporary anthropology and medical anthropology.

I shall therefore begin by reading Laclos and Sade in tandem, in order to draw out the essential similarities in their natural-philosophical approach both to literature, and to human nature as an object of observation and representation. I will then sketch how each represents sensibility's determining power in his fiction, analyzing first Laclos's *Les Liaisons dangereuses* and then Sade's early text *Justine ou Les Malheurs de la vertu* (1791). Clearly, the adaptation or co-optation of sensibility by these libertine novelists had some important implications for the period's larger project to promote enlightenment, personal self-improvement, and a judicious return to "natural" living. As interpreted by the moral anthropologists of late eighteenth-century France, the quest for enlightenment was natural for a certain type of sensible constitution (man' s) but unhealthy, if not impossible, for the other (woman's). Laclos and Sade provide an intriguing counterpoint to that interpretation: they demonstrate that the notion of sensibility could be applied to support a properly libertine vision of enlightenment--one that not only severed all the traditional ties between intellectual strength, bodily fitness, and moral ideals like propriety and moderation, but also went beyond gender in its relentless pursuit of sex.

Autobiographical Science and Scientific Autobiography: Goethe's *Italian Journey* and Plant Morphology; Bernhard Kuhn, Princeton University

My proposed paper explores the dynamic relationship between autobiography and the descriptive science of natural history in the works of Goethe. How are Goethe's attempts at self-inscription, self-knowledge, and self-realization and his passion for the formal study of nature related? In my paper, I focus mainly on Goethe's *Italian Journey* and his scientific treatise "On the Metamorphosis of Plants." The paper is part of larger project dealing more generally with the relationship between autobiography and natural history in the eighteenth and early nineteenth centuries in both France and Germany.

Starting with Goethe's early scientific essays, particularly "Nature" and "On Granite" and concluding with his later methodological texts, I examine the developing notion of the self as an essential factor in the "Metamorphosis of Plants." Turning to the *Italian Journey*, my focus is on the elusive and subtle ways in which natural history -- through its methodological assumptions,

descriptive techniques, and classificatory schema -- inextricably integrates itself within Goethe's autobiography. The descriptive goal of a smooth, neutralized prose underpinned by an aesthetics of particularity, a belief in the ontological priority of natural objects and the possibility of their perfect transcription into language, the notion of nature as a continuous and unified whole whose chaos is only apparent, each of these tenets of natural historical writing will be taken up, elaborated upon, and complicated by Goethe. By examining narrative perspective, the logic of the narrative, and moments of natural description, I hope to locate several key textual features that lead us to the natural historical undercurrents.

With the focus on natural history, the larger debate concerning the conflicting epistemological claims of science and literature takes an interesting turn. Natural history is a purely descriptive science. For the natural historian objective truth is not to be reached through abstract mathematical formulas and symbols, but rather through linguistic and pictorial transcription. Knowledge is achieved via a precise and meticulously thorough description of visible nature that shuns figurative language and a narrative that seeks to relate one natural object to another by means of a system of classification. The uncomfortable boundary between natural history and literature is tantalizingly apparent -- a boundary made even more fluid by the shifting status of the writer and the changing definitions of literature, science and nature around the end of the eighteenth century.

Charles Darwin: The monster that Mary built; William M. Teem, IV, Brewton-Parker College

During the last few months of 1831, printers Henry Colburn and Richard Bentley published the third, revised and corrected edition of Mary Shelley's *Frankenstein* or, *The Modern Prometheus*. This edition included Mary Shelley's previously unpublished introduction which cites the work of Erasmus Darwin as one of the inspirations for her novel. Even as the third edition of Frankenstein was being published, Erasmus Darwin's grandson, Charles Robert Darwin, boarded the H.M.S. Beagle for a voyage that would eventually result in *On the Origin of species by Means of Natural Selection*. The first edition of this book would appear in 1859.

When Charles Darwin made his voyage, he was not sailing on virgin waters. Thoughts regarding evolution had been floating around for about a century. What Darwin was able to do, however, was to combine those ideas into a theory that would capture the imagination of his colleagues and eventually pervade the mind-set of our society. In my paper "Charles Darwin: The Monster that Mary Built, I will show how Mary Shelley in her novel Frankenstein reached the same scientific conclusions about the theory of natural selection that made Darwin's work so revolutionary. She, however, arrived at this breakthrough 41 years before *The Origin of Species* was first published.

Session 2B: Prosthesis and Negative-Prosthesis: Versions of the Machine-Body (*Ardmore Room*)

Chair: Terry Harpold, Georgia Institute of Technology

The Sensibility Machines of Rebecca Horn; Paula Geyh, Southern Illinois University

The "sensibility machines" of transformational artist/inventor Rebecca Horn seek to open up new fields of sensory experience through the prosthetic extension of the body. Horn's prosthetic garments/apparatuses gloves which elongate the fingers to a length of five feet, lengthening manual reach but deadening sensation; a "cornucopia" which links the breasts to the mouth in a triangular, autoerotic economy; movable shoulder extensions which transmit and mirror the movements and rhythms of the wearer's legs; the "overflowing-blood-machine" which provides the wearer with an externalized circulation system of blood flowing from a base up through tubes draped over the body; and a "unicorn" horn rising from the head three feet into the air, immobilizing and isolating the upper body from the lower as the wearer walks - all probe the parameters of physiological awareness by extending and eliding the boundaries of the body. This presentation will investigate how these overdistensions of the body defamiliarize its movements and remap its proximal sensory systems.

keywords: prosthesis, autoeroticism, sensation, Rebecca Horn

Negative Prosthesis: Tsukamoto's *Tetsuo: The Iron Man*; Terry Harpold, Georgia Institute of Technology

> "Man has, as it were, become a kind of prosthetic God. When he puts on all his auxiliary organs he is truly magnificent; but those organs have not grown on to him and they still give him much trouble at times."
> -- Freud, Civilization and Its Discontents

This paper proposes a cautionary revision of a common figure of the cyborg: the cyborg as a synthetic entity -- structually organic, capable of wholly absorbing alien objects (flesh, steel, silicon, memes, etc.) into a body that is renewed and reinvigorated by its extensions.

I suggest instead a non-dialectical figure of the machine-body: its extensions are unproductively and unhappily sutured to one another ("negative" or "negating" prosthesis); the incomplete synthesis of machine and flesh leaves behind a revolting, inassimilable remainder that cannot be recuperated.

I will take as examples of this negative moment and its remainder scenes from Shinya Tsukamoto's *Tetsuo: The Iron Man* (1989) and its sequel/remake *Tetsuo II: Body Hammer* (1993). Tsukamoto's movies depict a hyperviolent landscape of creeping rust, booming machinery and electroconvulsive, fetid flesh -- populated by metal fetishists, skinhead robophiles, mad scientists, mechano-phallic seductresses, and mutating salarymen whose bodies sprout swarming wires, killer-drill phalli and smoldering ductwork. The movies swing wildly between technophilic and technophobic extremes. Their extremity and perversity suspend any possibility of resolution or synthesis: the Iron-Man suffers the mutual resistance of flesh and steel; his pleasure and terror are bound to rust and gore, the junk-residue of his transformations.

The Body Transmachinic: Cyborgs and Machinic Heterogenesis; Jeffrey Fisher, Ohio Wesleyan University

Donna Haraway has lifted the concept of the cyborg out of science fiction, transmuted it into a paradigm for cultural (and even biological) change, and returned with this broader view of the cyborg to reading science fiction as a challenge to traditional humanistic values. In this paper, I will attempt to explicate Haraway's cyborg in terms of the Deleuzian "machine," particularly as

elaborated by his co-author, Felix Guattari. Haraway's cyborg is read here as a meta-mythical version of the "nomad machine." The paper proceeds in part by discussing Haraway's favorite text, Octavia Butler's *Xenogenesis*, along with James Patrick Kelly's *Look Into the Sun*, setting these texts over against Bruce Sterling's *Schismatrix* and William Gibson's *Mona Lisa Overdrive*. Thus I bring Haraway's concern first back to the specifically technological, then to a consideration of the cyberspatial cyborg. By so doing, I hope to steer a path between a romantic view of the body and a mystical view of a transcendent cyberspace.

Session 2C: On Visuality (*Brookwood Room*)

Chair: Linda Dalrymple Henderson, University of Texas - Austin

The Concept of "Appropriate Explanation"; James Elkins, School of the Art Institute of Chicago

At the most recent meeting of the College Art Association, I chaired a session where all the speakers were historians of science; the result (as Linda Henderson witnessed) was that the room, which had originally had about 80 people, emptied almost completely. Most of the audience expected scientific images of the kind that artists used (for instance, popular science and mechanics images used by Max Ernst to make collages). But I chose the papers to reflect the most interesting contemporary work on scientific images in general, and several of my speakers embarked on fairly long technical descriptions of the images.

Thinking about this afterward, it occurred to me that art historians (and people in the humanities generally) think that images should be apprehensible in an immediate, intuitive manner, and that any protracted, "technical" study may then follow afterward. In science, on the other hand, it is taken for granted that images will require technical, rulebound introductions before they can be understood. An average graph will take some "setting-up" before it can be read. So the art historians may have been perplexed or put off by the amount of introductory material that my panelists introduced. The odd thing about the assumption that images do not ideally require "setting up" to be appreciated is that art historians are perfectly happy to read (say) thirty or forty pages of material in order to come to a good understanding of an image. In a very real sense that is also preparatory work, but it does not appear as such because it is nontechnical.

This paper would explore the various tolerances and intolerances that are felt in several sciences and humanities toward images (e.g., cognitive psychology, physics, recent and older art history, literary studies).

Keywords: explanation, interpretation, picture, understanding science, art history, psychology, physics, literature, literary criticism

The Color of Consciousness; Karl F. Volkmar, Southeastern Louisiana University

With the luminous surfaces of *February Morning at Bazincourt*, Camille Pissarro resolves the Problem of his search for unity that had been his central concern for over twenty years. With the assistance of the research of Chevreul, Maxwell, and Rood into the physical properties of light and the perception of color and dynamic theory of consciousness emerging from the study of hypnotic phenomena by Charcot, Bernheim, and Myers, Pissarro develops a synthesis that had eluded Neo-Impressionist Georges Seurat and poet Charles Baudelaire through the medium of the painter. The two dimensional representations of science and mystic "speech of flowers and other voiceless things" of the poet converge on the surface of the canvas in a synthesis through the shared language of color and light. In this luminous experience that the artist could only describe with the musical term of symphonic unison where all sounds and substance seem as one, Pissarro resolves the conflict between science and art without lapsing into mechanism or mysticism. The painter suggests a resolution of distinctions between matter and mind that had plagued western thought since the seventeenth century in a synthesis of psyche and physis in the gestural flux of luminous pigment. Pissarro's pictorial synthesis looks forward to the developing changes in western science at the turn of the century through an embrace of Descartes's mind and body and Pascal's heart and reason within the unison of aesthetic experience.

Keywords: art, science, color, light, music, poetry

Beginning's End: Ideas of the Human in Nineteenth-Century Spain; Dale J. Pratt, Brigham Young University

In 1879 don Marcelino Sautuola and his young daughter Maria discovered in a cave outside Santillana del Mar in Cantabria one of the world's outstanding collections of Paleolithic cave paintings. Overlaid upon natural outcroppings of rock were the brownish shoulders of Prehistoric bison, deer and other animals. Sautuola immediately communicated his discoveries to the Spanish scientific community, which initially supported his contention that the caves truly were prehistoric (e.g., as in Juan Vilanova y Piera's presentations to international conferences on Anthropology in the early 1880s). However, the skepticism of the leading French anthropologists of the day belied the careful observations of Sautuola and others (including their studies of paleolithic artifacts associated with the caves) and the paintings were declared a hoax.

This story serves as a parable for a rumination on what the nineteenth-century Spanish cultural milieu allowed the term "human" to mean. "Culture" is always a loaded term. Semioticians like Yuri Lotman and Boris Uspensky have argued that "culture" is the set of processes by which the groups of texts traditionally denominated "culture" come into being. The semiotic mechanisms of accumulation, change of norms, and forgetting mix in varying proportions over time to create a cultural milieu. Against the background of non-culture, culture appears as a macro-set of numerous signifying systems. Much like the relief provided by the cave walls, non-culture constrains these signifying systems even as it serves as a screen upon which they can mean. A bison painting can only be the size and shape permitted by the underlying texture of the rock if the artist wishes to incorporate the physical characteristics of the rock into the painting. Similarly, culture is constrained by non-cultural context (history, physical geography, bodily functions, etc.). The cave paintings at Altamira show how context precedes and precipitates text; the non-cultural rockwall accepts the prehistoric pigments and yet determines to some degree their placement.

This visually-oriented project examines the idea of the human in the cultural context of nineteenth- and early twentieth-century Spain. "Lo humane" repeatedly metamorphosed as nonculture--whatever is "natural" about human nature and physiology--received various layers of cultural paint from Krausism's "harmonic rationalism," Darwinism and its popular offshoot Haeckelism, criminology, studies in bacteriology and histology, psychology (Lombroso's *Genio* and Pardo Bazain's *La nueva cuestión palpitante*), and the literary explorations of realist writers such as Galdós, Pardo Bazáin, and Alas. Krausism delineated a relationship between God, Spirit, and Bodyon the most abstract level. Haeckelism controverted God's role in this triangle, and drastically changed the definition of spirit. Criminology sought in physiognomics the mechanism for sorting humanity into the categories suggested by social darwinism. Pathologist José de Letamendi reiterated this process on the cellular level when he created a "simbólica anatómica" in which cell boundaries also became the boundaries of self and other. Ramón y Cajal's scientific rhetoric links anthropomorphic neurons with the consciousness emerging from the nervous system as a whole. The realists united many of these perspectives in their art, but in many cases insisted that the "human" was *Homo Aestheticus* and not anything resembling contemporary anthropological concepts of *Homo sapiens*. These versions of "the human" were shaped by the natural context (the human body/nervous System/physiognomy) in a numerous ways even as they imposed various systems of differences on that context. Ironically, when hard scientific evidence of early humanity's cultural world was discovered by Sautuola, it was discounted because it did not jibe with the pre-existing semiotics of "the human" in Spain.

In this presentation, each of these perspectives will be shown to have a strong visual conceptualization, with many transparencies/diagrams serving as examples.

The Retina Blues; Joseph J. Allen, Ball State University

There is no clear resistance to the immeasurable power of Michel Foucault's gaze. The gaze itself is unseen as it dismembers and fixes. Resistance disappears. Resistance is silenced. Anything falling outside of the gaze and its fictions is concealed--it is negated, diminished, erased or rendered

problematically and culturally invisible--while what falls in the peripheries of the State apparatus is sanitized, colonized, desensitized, bought and sold, visible yet impotent. In gaze culture, by denying on incorporating difference, the State/Media apparatus recounts the story of its Other, a story that must necessarily create impotent visibility and cultural invisibility in order to propagate gaze culture. For minority or Other cultures stuck in this relationship, to the gaze, their cultural visibility is like a blind spot in the unmoving eye of the gaze.

While the metaphor of the vision system offers several insights into invisibility and cultural visibility, the margins, obtuseness and nervousness of the vision system is even more evocative. Although Foucault's controlling and surveilling gaze may appear to be insurmountable, the gaze can be metaphorical reversed so "objects" (or marginalized voices can be heard and felt in their own noisy and tactile contexts rather than solely the Eye's context. In the obtuse margins, a cultural visibility can then be attained by reversing the gaze and adding other senses to the mix.

"The Retina Blues" tracks this unseen landscape of the invisible and the visible as well as the border between them. There are narratives that circulate far from the reaches of the gaze of the State/Media conglomerate and their apparatuses of power. Such narratives take an active role in cultural production and tell the story, in its infinite hues and multiplicity, of the Other. Their aesthetic of narrative and storytelling makes visible the invisible, revealing what has beer, concealed and repressed.

Cultural visibility as well as a more-than-visible cultural visibility encompass my primary concerns. My theory of cultural visibility offers a strategy of resistance; a cultural visibility that has personal, social, political, and even economic power as if freely and openly circulates, representing culture, transmitting culture, and recreating culture.

Session 2D: Cyberpunk and Popular Culture (*Morningside Room*)

Chair: Candace Lang, Emory University

Of Hyperreality and Hype: Science, Fiction, and Popular Culture; June Deery, Rensselaer Polytechnic Institute

This paper begins with a comparison of both the ontological and epistemological status of cyberspace, of VR, and of fiction and goes on to examine the relation between fictional representations of cyberspace, popular media accounts, and the work of scientists. For fictional accounts I look to texts by Gibson, Stephenson, Piercy, and some older, pre-Gibsonian representations of cyberspace by e.g. Vinge and Brunner. I also draw on journalistic accounts of these new technologies and reports from scientists on their own readings of what used to be called cyberpunk literature.

One aspect I consider is the utopian function of this contemporary cultural material and the tendency of each of these genres to adopt a utopian rhetoric. At this point I compare the no-places of utopia and cyberspace. The paper concludes by arguing that fictional projections of technology continue to offer important sites for playing out collective dreams in imaginative and logical models with practical, sociopsychological benefits.

Incidentally, such is the pace of development (e.g. with the Web) that I also fully expect to incorporate new material between now and the conference itself. Consequently, this is a paper in flux. (And, needless to say, virtual).

(Re)-membering Female Subjectivity: Gender and Textuality in the Cybercultural Matrix; Dawn Dietrich, Western Washington University

Although I have previously cited the cyber matrix, including its print representatives, as the locus of conservative gender politics, I also believe it has the potential to constitute a subversive, feminist space, literally a site where women can "re-member" their own gendered self-identit(ies). Cyberspace offers the potential for virtual communities, or "consensual loci," where women can join voices/texts to articulate (and activate) issues pertinent to them. In an effort to reconstitute a feminist "subject" in the context of postmodern decenteredness, this task becomes an effort both to inscribe a virtual space and follow through with active choice in the material world. In this instance, cyberspace becomes a narrative space, a potential authoring site in an economy where textual circulation can recover political agency.

Yet, the notion of cyberspace as a radical domain for women necessarily raises several issues of concern. For, as Anne Balsamo and other cultural feminists have argued, female bodies are inscribed culturally into specific paradigms that determine the nature of identity and subjectivity. For women in Western cultures, this has been a paradigm fraught with difficulties, for the physical body has been the site offer vent battles regarding female sexuality, reproduction, and identity, so much so that it be comes impossible to separate feminine subjectivity from a particular system of embedded power relations. Because of these patriarchal tensions, it becomes necessary to situate female subjectivity within a gendered context in the cybercultural matrix.

If we think of cyberspatial identities as mediated through gender, the discursive feminine body can be read/narrated in such a way as to preserve a sense of presence, politics, and history in a medium increasingly characterized by shifting fields of meaning. In this sense, an electronic community of women becomes a symbolic space, an engaged social space, that defines itself through a particular textualized culture. Overriding geographical limitations women can gather together in ways that challenge the constraints of time and space, allowing them to explore the potent relations among agency, (author)ity, and discursive community.

Key Words: cyberspace, gender, technology

Raiding the Boys' Toys or Who Gets the Hardware: Cyberpunk and Feminism; Rebecca J. Holden, University of Wisconsin-Madison

The traditional discourse regarding the relationship between science and gender, which dominated most science fiction until the late 1980s, aligns hard science and its technological advances with men and the softer sciences of psychology, sociology, and even "magic" with women. This discourse prescribed extremely limited avenues for women to enter the world of hard science; women scientists and women science fiction writers could become "manly" -either through the use of a male or gender-ambiguous pseudonym or by living the un-feminine life of a childless, husbandless, and emotionless scientist dedicated almost un-humanly to her work. Feminist science fiction writers of the 1970s, writing during feminism's visible entrance into the genre, worked toput women, as major players, into the futuristic and advanced worlds of science fiction. Books by feminist science fiction writers during that decade, including Suzy McKee Charnas, Marge Piercy,and Sally Miller Gearhart, brought the concerns of women into the world of science fiction, but these writers still followed the dominant discourse of gender and science. Hard science, though setup as destructive and violent, was still seen as masculine; women worked with natural and psychic powers to make the world a better place.

More recently, Donna Haraway's "Cyborg Manifesto" (1985), as well as a number of feminist science fiction novels, introduced an opposing discourse. Haraway's brand of feminism proposes the metaphor of the cyborg, a being that is part organism and part machine or mechanical, as a way to envision how feminists can take advantage of scientific technology to make partial but potent connections with each other. A cyborg feminist, thus, is one who can make use of and intervene intechnology and the world of hard science, transforming it in feminist ways and putting it to feminist uses. This discourse acknowledges both the inevitability and the potential usefulness of hard science and advanced technologies for women in today's world and in the future. This newer discourse of science and gender continues to fight its traditional counterpart which persists in both feminism(s) and science fiction. However, the newer discourse itself is not without problems. Haraway's portrait of a utopian cyborg world seems difficult to reconcile in the light of atomic weapons, invasive medical technology, and surveillance inventions. Also, it remains unclear how feminists might put Haraway's model into practice. If feminists give up their claim to the ethically superior, non-violent, and non-destructive soft sciences for the less "pure" hard sciences, won't their projects run the risk of reproducing the violence traditionally associated with the original products of hard science?

Like the earlier feminist science fiction texts that introduced women and their concerns to imaginative pictures of the future, a number of recent feminist science fiction texts introduce and interrogate the new discourse of science and gender. Through such texts, we can see what might happen when feminists engage, as cyborgs, with the world of hard science and its products. In an effort to determine the usefulness for feminists of these varying "cyborg" positions realized in these texts, I examine recent cyberpunk novels, a genre which focuses on the often illicit world of computer "net" works and hackers of computer information, by Melissa Scott and Pat Cadigan. In cyber-space, as computers and computer generated image "write" on and program the body, gender and sexuality themselves appear to becomes much less determined. Do these "cyborg" positions allow for potent connections? Does the technology of the "net", which allows for the separation of bodies from people, free individuals from their gender or does it merely mask the gender inequities of society? How might feminists integrate computer hardware with bodies marked by gender, race, class, and sexuality? What would such integrations produce? Does embracing a cyborg positionality necessarily entail an obliteration of the body and, consequently, a separation from historical difference and inequities? In answering these questions, I hope to uncover how feminism(s) might invoke the discourses of science and gender, both in traditional andrevised forms, not to engage in a dangerous essentialist celebration of women nor to replace gendered bodies and their history, but to reform the bodies and the discourses to meet the challenges of our postmodern world.

Key words: cyberpunk, feminism, Haraway, Cadigan, Scott, feminist

The Reactionary Politics of Neal Stephenson's *Snow Crash*; Michael L. Merrill, University of California - Los Angeles

Reading Neal Stephenson's *Snow Crash* is an undeniably exhilarating experience. His knowledge of technologies as old as writing and as new (or futuristic) as cyborgs allows him to weave a story drawing upon the narrative power of our awestruck worship of machinery. But Stephenson does not simply have the power to reflect possible futures; his cultural position allows him to shape them as well. For, like William Gibson, Stephenson has become a prophet to some of those actively engaged in constructing the cybernetic world. These disciples treat his novel as a vision that can be soon realized-and will be, whether it is advisable or not.

Recently, several companies--including one named "Black Sun" after a meeting place in Stephenson's cyberspace--have begun the process of making Stephenson's vision a reality. They seek not only to "re"create the spatial dimensions of Stephenson's world (one not wholly unlike Gibson's), but, importantly, they wish to realize Stephenson's notion of avatars, "shapes" one assumes in this cyberworld.

All this might seem like harmless fun, new gaming technology in the making; in the not too distant future, it may even have useful practical consequences--especially if you are a consumer marketer. But Stephenson's vision may not be so benign: his notion of power is not one that we may wish to embrace. Stephenson's world is one in which the Federal Government engages in coercive mind games with its employees; the only real control, however, is wielded by the Mafia; and the only productive cultural engine is consumerism of the lowest and most cynical variety. Even given a hearty dose of irony, this is hardly the stuff progressive politics are made of.

Using an ideological analysis of *Snow Crash* as a starting point, I will propose possible progressive interventions into cyberspace. This important medium is being handed over to some of the least civic-minded interests in our society. If we are to preserve interconnectivity for the public-spirited action it is well capable of handling, we must make our move now before it is too late.

Luddites in Victorian Cyberspace: Technology, Politics, and Ideology in *The Difference Engine* by William Gibson and Bruce Sterling; Nicholas Spencer, Emory University

William Gibson and Bruce Sterling's *The Difference Engine* addresses important Issues concerning the relationships between the narrative assumptions of postmododern fiction, the determination of political systems by technological developments, and the ideological nature of struggles amongst competing scientific theories.

In Gibson and Sterling's imaginary Victorian London, Lord Byron's Industrial Radical Party has assumed power and is vigorously promoting technological advancement; its most prevalent technological implementation is the widespread use of Charles Babbage's difference engine as a means of information storage, surveillance, and social control. The postmodernity of *The Difference Engine* subsists, in part, in its emphasis on the 'supplement' (Derrida) and an absence of closure: the pursuit of full social control is undermined by the unpredictable elements within the depicted society, and this destabilizing tendency is reflected in the narrative indeterminacies of the novel itself. On a theoretical level, the subversive forces within *The Difference Engine* are an expression of Gibson and situationist activities of Captain Swing, the self-confessed follower of the Luddites.

It is difficult to make the various technological and political issues in the novel cohere, just as it is impossible to unify the disparate, "paralogical" (Lyotard) micronarratives of *The Difference Engine* into one seamless, causal whole. This lack of ultimate resolution reflects a tension which is omnipresent in cyberpunk writing. On the one hand, the anarchic tendency of cyberpunk seeks to disempower corporate or governmental control by increasing the integration and availability of communications technologies. On the other hand, these technologies also serve to increase the potential of surveillance and social control. This tension is overcome by an appeal to a notion of

spontaneous order which cites chaos theory, amongst other concepts, for its scientific and technological validation.

This 'resolution,' with which *The Difference Engine* concludes, retains elements of a politics based on anarcho-syndicalism and the "direct democracy" of Kosa Luxembour; it also allies itself with Adam Smith's doctrine of the "invisible hand" of free market capitalism. This is an uneasy compromise, which serves to re-posit order and closure, this time under the rubric of chaos theory rather than mechanistic control. In so doing, *The Difference Engine* retreats from its postmodern impulse by attempting to suppress the significance of its own supplement: the Luddites. As most historians of the Industrial Revolution agree, the Luddites were not opposed to technology *per se*. but rather its ownership and control within the factory system. The questions which the historical Luddites asked of Regency entrepreneurs, and which their fictional counterparts ask in *The Difference Engine* remain unanswered at the novel's conclusion: who owns technology who profits by technology? upon what basis is technology naturalized as 'progress'? and what recourse is available to those who have been disenfranchised by technological enframing?

Session 2E: "Science Fiction": The Role of Science as a Structuring Element in Literature, Theater, and Poetry (*Georgia Room*)

Chair: TBA

Stoppard, Science and Hapgood: Theater as Intellectual Event; Christopher A. Shearer, Institute for Educational Leadership

Western society is reliant upon and dedicated to science and scientific achievement. As the Information Age progresses, an increasing number of Westerners spend an increasingly large amount of their lives dealing -- directly or indirectly -- with the by-products of advances and changes in scientific theory. It is therefore striking that such a distance exists between science and literary art in Western culture. Well-written popular science books -- like Stephen Hawking's best-seller, *A Brief History of Time* -- often become widely read, yet few fiction writers concern themselves seriously with science; this appears particularly true of the stage.

Tom Stoppard, however, is one popular playwright who consistently bridges the gulf between science and literature. His 1988 play, *Hapgood*, which received its first New York staging only in 1994, is his best effort yet at uniting stagecraft, wit, emotion and scientific thought.

A close reading of *Hapgood* reveals Stoppard's extensive and engaging use of quantum mechanics to provide: (a) an "ah-ha!" experience for entertainment's sake; what Robert Gore-Langton calls Stoppard's "set speeches of explication that give the audience a temporary thrill of intellectual illumination"; (b) a metaphor for international espionage that is used as a structural tool for organizing the work; (c) a background for exploring the modern scientific mindset in contrast to 19th and even early 20th century outlooks; (d) an extended analogy between the duality of light and the duality of human behavior and emotion; and (e) a thematic matrix in which to craft language, using words themselves as dualities.

Creativity, the creativity of the physical world, is evident throughout *Hapgood*. Stoppard presents his audience with a play centered on the astonishing paradoxes inherent to reality itself. Through the duality of light -- exposed by the work of Thomas Young and Werner Heisenberg as recounted by Richard Feynman -- Stoppard explores the basic mysteries of the universe and humanity. Although Stoppard might downplay it ("A play is not the end product of an idea, the idea is the end product of the play"), he has married scientific theory and entertainment to bring his audience back again to drama at its most rewarding -- theater as intellectual event.

Stratified Absurdities: Metanarrative Indeterminacy in Vassily Aksyonov's *Our Golden Ironburg;* Rick Wallach, University of Miami, and Samuel G. Marinov. University of Kansas - Lawrence

Since its publication in 1971, *Our Golden Ironburg* has engaged and often confounded its critics with its formal and thematic complexity. Now achieving widespread recognition in the west, Vassily Aksyonov, in his most under-read major novel, affords Western readers a rare glimpse into a cloistered world. The novel awaits detailed analysis of its recursive metanarratives, constantly interacting with each other in a labyrinthine parody of the privileged culture of the Soviet scientific community.

Utilizing a narrative framework and characterizations derived from Bulgakov's *Master and Margarita*, itself a cryptic satire of the early Stalinist state, *Ironburg* lampoons the intellectual communities gathered in Khrushchev "thaw"-era scientific superinstitutes. The population of Aksyonov's titular institute is a rogue's gallery of readily identifiable figures. These include the institute's director, the venerable physicist Veliki-Salazkin, based upon Hirsch Budker, the historical founder of the superinstitute Akademgoradok near Novosibirsk. Aksyonov cannily contrasts these eccentric personages with preposterously stereotypical "New Soviet" characters, emphasizing the gulf between reality and propaganda.

The Ironburg's liberalized lifestyle is disrupted by the arrival of a KGB operative named Memozov, who compares himself to Bulgakov's satanic Woland and poses as a disaffected avant-garde writer. Representing the return of repression that ended the "thaw," Memozov challenges the narrator of the story to maintain the integrity of his text, identifying himself as its "anti-author" and with the quixotic, disseminative nature of language itself. But Memozov's interference with the author's intentions and the institute's scientific activities also inflects the novel's central, mediating metaphor, the competing world views of Newtonian objectivity and Quantum indeterminacy.

Thus, Memozov as simultaneous outsider/infiltrator is the fulcrum of the recursivity of the novel, as his battle with the narrator and the various characters through whom the narrator attempts to regain control of the story, spills over into metanarrative and metatextual space. Here, between the strands of the narrative and beyond it, the novel most deeply engages its social, political, and artistic themes. Ultimately, *Our Golden Ironburg* subverts official models of art forced into practical service to the state not merely via typical modes of Soviet-era parody, which it parodies itself, but by celebrating via its own deeply encrypted format an art that exists substantially in and for itself.

Keywords: Russian Literature, Soviet Science, Parody, Metafiction

'The Various Envies': Fernando Pessoa and the Natural Sciences; Suzanne Black, University of Michigan

Recently canonized by Harold Bloom, Fernando Pessoa (1888-1935) has long been considered one of Portugal's greatest poets. Pessoa's achievement derives in part from his invention of the "heteronyms"--three alternative poetic personae with biographies, philosophies, and styles distinct from his own. Since two of the heteronyms are given scientific professions and since the word "ciência" echoes throughout Pessoa's writings, it is surprising that no sustained attention has been given to the role of the natural sciences in Pessoa's thought. Certainly the fictional biographies of the heteronyms should not taken too literally, but the professions chosen for them are not completely arbitrary and do at a metaphorical level suggest a certain way to interpret the poetry. In fact, the figure of the scientist is for Pessoa a crucial, if perhaps equivocal, symbol of the search for knowledge. Sometimes science is part of knowledge in general, which "weighs so heavily,/ And life is so short"; on other occasions it is linked to more trivial and ephemeral details of material existence.

Science and especially technology appear most frequently in the works of Álvaro de Campos, a heteronym who wrote in an exuberant style reminiscent of Whitman and who often identifies himself as an engineer. The early works of this heteronym, both the polemical prose and the long odes, invoke scientific formulae and machine parts both for political provocation (in the 1917 "Ultimatum") and to create a cosmopolitan modernism. Later poems by this persona are less flamboyantly modernist but many still center on mechanical objects (cars, trains, trams, typewriters). Campos often presents this technology as painful and alienating, but his position as a naval engineer trained in Britain and unemployed in Lisbon also serves as an ironic gloss on Portugal's loss of maritime hegemony in the machine age.

Although Pessoa insists on several occasions that Ricardo Reis is a medical doctor and represents a "scientific" neo-classicism, Reis's severe, highly compressed odes never refer to their speaker's profession, nor do they thematize somatic illness to any great extent. They are, however, related at an allegorical level to medicine, for Reis's opus tries to teach how to control suffering and attain knowledge of the self. In addition, recently published prose fragments suggest that Reis was meant to be an advocate and spokesman for the sciences, editing, for example, a scientific journal and defending the sciences against religion.

Alberto Caeiro seems on the surface the simplest of the three heteronyms, with his simple prosaic style and unsophisticated pastoral subjects. In fact, Caeiro was named the "master" of the other two heteronyms and of Pessoa himself, and his works are far more complex philosophically that they at first appear. These poems begin with ridicule of metaphysics, and especially of metaphysical poetry about Nature. Later poems criticize science in much the same way, rebuking it for a hubristic attempt to explain and systematize a Nature which "has no inside."

And what of the works Pessoa signed with his own name? They range from a doggerel rhyme which uses some basic chemistry to dissolve Salazar, to detective stories which explicitly invoke science and mathematics, to more pessimistic reflections on knowledge and what Pessoa called the "occult sciences." While Pessoa did study mystical movements like Theosophy, he frequently claimed that his interest in them was rational, and Jorge de Sena has argued that Pessoa's enthusiasm for these occult sciences is compatible with respect for mainstream science. While Pessoa is sometimes skeptical of and often somewhat unfamiliar with the sciences, he clearly considered them a privileged field of inquiry with symbolic resonance, and engages them in varied and complex ways in the work of all his personae.

Keywords: Pessoa, Fernando; medicine in literature; engineering in literature; technology and modernism.

Ellipse and Ellipsis in the Poetics of Severe Sarduy; Thomas E. Peterson, University of Georgia

For many years before his recent death, the Cuban poet and exile Severe Sarduy broadcast a science program in France. His 1974 volume of poetry, *Big Bang*, and his subsequent essay *Barocco* reveal the nature of Sarduy's involvement in astronomy and cosmography in particular, and his genial ability to establish transdisciplinary connections between discoveries in those fields and epochal changes in literature and art history. As a theorist of the baroque and an adept at the South American neo-baroque, Sarduy defined their rhetorical and epistemological characters, and their distinctions from one another, in a lucid, though typically complicated post-structuralist and psychosexual manner. (As the translator of *Big Bang* in 1979 I needed to consult with the author about opaque terms and concepts employed in those poems.)

In my paper I will illustrate the parallel natures of the Keplerian ellipse (as opposed to the Galilean circle) and rhetorical-epistemological ellipsis, I shall elucidate these transdisciplinary concepts by referring to Panofsky's *Galileo as a critic of the Arts* and Michel Serre's recent remarks on the philosophical contemporaneity to us of "Kepler's Ellipse and Its Double Center". I shall then illustrate the same concepts through a reading of Sarduy's poem "Big Bang" (in the eponymous volume), a 17-part poem (including scientific drawings) which also draws on an elaborate analogy between contemporary theories of cosmogony and Velazquez's famous painting, "Las Meniñas"

Keywords: Baroque, Neo-Baroque, Kepler, Galileo, Sarduy, Serres, Velazquez, Cosmogony, Big Bang vs. Steady State, Poetry

Emerson's Electric Tropes: Towards an Electromagnetic Poetics; Eric Wilson, City University of New York

I explore the influence of electromagnetism on Emerson's idea of nature and his related poetics. While there have been important studies of the influence of science on Emerson, none has yet considered in detail how the work of Michael Faraday and his predecessor Humphrey Davy affected the essayist's work. Emerson's engagement with the science of electromagnetism pulled him away from nineteenth-century organicism and its related symbolist poetics and toward the scientific paradigms and *avant garde* poetics of the twentieth century.

By focusing on Emerson's journal entries and early lectures between 1832 and 1836, 1 demonstrate how he was becoming aware of Faraday's electromagnetism and Davy's

electrochemistry. He found in the British scientists' work an electrified version of Goethe's organicism and a basis for electrifying Coleridge's poetics of symbol. His engagement with Davy and Faraday suggested to him that the animating force of nature is electricity. Extending Davy's work on the electrical composition of chemical elements, in 1831 Faraday, after discovering electromagnetic induction, hypothesized that magnetic and electric energy were lines of force that cut through the ether filling all space, including matter. In 1833, Emerson praised Faraday's discovery in his journal, claiming that the scientist had opened "almost a door to the secret mechanism of life & sensation." Faraday, in Emerson's mind, had perhaps revealed the essential force of life, not through intuition but hard science.

Electromagnetism influenced Emerson's poetics, which were based on his 1831 claim that "in good writing, words become one with things." If things were, as Faraday suggested, patterns of electrical force, then words should be palpable, dynamic, electric. Emerson began to equate good writing with electricity, suggesting that powerful language is a compression of forces, like a drop of water containing the electrical charge of lightning. The book of nature, the work of Faraday implied, is charged, a pattern of electrical energy. Emerson translated this insight into the formal elements of his essays, attempting to conduct nature's spherules of force into the circuits of his words. To exemplify Emerson's electric writing style, I rhetorically analyze the famous "transparent eye-ball" passage in *Nature*, in which Emerson compresses numerous tropes, figures, and allusions to charge his language with maximum significance, constructing a Poundian vortex, a "radiant node . . . from which, and through which, and into which, ideas are constantly rushing."

I suggest that Emerson is not only part of that illustrious tradition of artists, extending from Lucretius through Milton to Goethe, who ground the form and content of their works in the facts of science, but also a precursor of the great stylistic innovators of Modernism, like Joyce and Pound.

Session 2F: The Cultural Work of Cognitive Science (*Piedmont Room*)

Organizer James J. Paxson, University of Florida

Distributed Cognition and Literary Studies: Cognitive Ecology and the Poetry of Charles Reznikoff; Margaret A. Syverson, University of Texas - Austin

Of growing importance in contemporary cognitive science is the work being done by theorists including Lucy Suchman, Jean Lave, Karen Rogoff, David Woods, and Edwin Hutchins: these new cognitive scientists, field-trained as anthropologists, argue that the role of culture in human cognition, though often "bracketed out" by cognitive scientists, is irreducible. Indeed, they insist, the activity and products of cognition are "distributed" across individuals, their social structures, and their material environments in a "cognitive ecology." Their argument goes beyond common-sense notions that culture or history influence how individuals think, or that the thought of individuals generates culture. In the view of these cognitive scientists, the appropriate unit of analysis for cognitive theorization is not the individual at all nor the individual's seemingly isolated products. Rather, cognitive scientists ought to look at activities situated in specific social and physical environments, which both constrain and enable participants, whose actions and interactions further shape the environments in which they are acting.

The most carefully and powerfully articulated presentation of this approach can be found in Hutchins's *Cognition in the Wild* (MIT Press, 1995). Hutchins uses comparative ethnography, computational modeling, discourse analysis, and video analysis to study navigation on board a Navy transport ship. In the process, he demonstrates a theoretical and methodological framework that holds great promise for literary study: when we move beyond the individual as unit of analysis (the single author, the isolated text), we can recover much of the dynamic process of literary activity that has been traditionally lost, overlooked, or underrepresented. Literary activity can be theorized as a dynamic cognitive process situated in an ecological system of readers, writers, texts, and their environments.

A short passage from an autobiographical poem published by the Objectivist poet Charles Reznikoff provides an analytical model for this inquiry. The passage describes the arrival of Reulikoff's grandparents in New York City as they emigrated from Russia at the turn of the century. The passage appears to present a family vignette as vividly recalled from a young boy's memory. Papers in the Archive for New Poetry at UCSD reveal a more complex story, for in the Reznikoff papers there are, together with Reznikoff's early drafts of the poem, manuscripts written by his parents in which the same family incident finds description. It is clear that Reznikoff, who edited these manuscripts and published portions of them over a number of years, also drew on them for details that appear in his poetic passage. Further, his poetic style incorporates elements of both his mother's simple and direct prose expression and his father's rich sense of cultural and historical narrative infusing contemporary life. Upon closer examination, the passage as it is published, seemingly the reflection of a solitary memory, gives surprising evidence of distribution in its cognition.

Keywords: cognitive science, distributed cognition, invention, Charles Reznikoff, modern poetry, Archive for New Poetry, Objectivist poetry, Edwin Hutchins, David Woods, culture, cognitive ecology, social environment, narrative, immigration, childhood memories, New York City, Russia, authorial style

Allegorical Discourses in Contemporary Cognitive Science: The Case of Roger Penrose's Quantum Theory of Consciousness; James J. Paxson, University of Florida

This paper opens by treating the current, popularized scene of cognitive science in terms of how two competing theories -- the quantum-actuated model of Roger Penrose as it is presented in *Shadows of the Mind* and the computational and "accumulational" model of Daniel Dennett from *Consciousness Explained* and *Darwin's Dangerous Idea* -- both rely on the occulted semiotics of allegory. Dennett's adherence to the homuncularist paradigm revives the regressivist logic of Prudentian personification allegory (the idea of a nested or communal constellation of synecdochic, mirror-versions of the containing human self that function as interactive parts, or "slaves," or "daemons". The accumulational function of all the synecdochic slaves or microcosmic effigies constitutive of a human mind has served, in part, as the very target of Penrose's anti-computational, anticonnectionist, anti-homuncularist polemic.

However, Penrose's model, which promises liberation from the homuncularist paradigm and its corollary computational mechanics, also posits an equally archaic semiotic powered up by allegory. This semiotic involves (1) Penrose's initial move to rest his sub-cellular or cytoskeletal, quantum-actuated cognitive mechanics on the exotic but still problematic theory of cytoskeletal phylogenesis developed by Lynne Margulis. The Margulis-Sagan thesis of eukaryotic origin invokes the allegorical scheme of "transgenic" or "theriomorphic" biological formation. This scheme underlies the hypothetical narrative about the primordial fusion of mutually alien, akaryotic protobacteria into the first eukaryotic, or cytoskeletally structured, protozoa. In short, Margulis's transgenic allegorical narrative echoes other such transgenic narratives in Western mythology -- the myths of the chimaera, the sphinx, the hermaphrodite, the hippogriff, and indeed many of the transgenic transformations monumentalized in a text like Ovid's *Metamorphoses*.

But Penrose's allegorical semiotic also underwrites (2) the materialist or biological scheme of what I've come to call a "pan-cephalic" and by extension "meta-cephalic" or "pan-corporeal" human consciousness. Located not merely in the cerebral cortex's neuronal network of synapses (which the computationists had analogized to electronic switches, and thus binary logic gates, ever since the research of McCullogh and Pitts a half-century ago and as late as the theorization of Gerald Edelman in this decade), human cognition for Penrose (or for Michael Conrad, whom Penrose follows) by implication has the capacity to arise wherever there is found a human eukaryotic cell -- wherever, in human limbs, organs, or excrescences, cytoskeletal tubules hum with the divine buzz of quantum-wave activity. Furthermore, my paper also asserts how this pan-cephalic semiotic of embodied (and intra-bodied) human consciousness lends support to the until recently bankrupt archetypalist theory of consciousness (the theory, propounded by Jung, Joseph Campbell, and others, that cognition understood as memory is racially based and genetically transmissible via reproduction). This consequence of Penrose's occulted and tacit semiotic armature also posits the mechanism of quantum-based consciousness in any eukaryotic cell or organism found in nature -- from protozoa and flatworms up through trees, sheep, as well as people. In other words, the Penrosian semiotic reinstalls the allegory of a potentially universal consciousness, an animistic prosopopeia, in just about all living things. The implication comes as the materialist climax in the history of cognitive theorization. But it ironically gives Wordsworth and the other Romantics, who poetically configured animal and vegetable life as sentiently imbued and luminous, their revenge on the positivistic discourses of science indeed. The paper concludes by considering its incipient "semiotics of cytology" in terms of the science fiction of Greg Bear, particularly his 1985 novel *Blood Music*.

Keywords: cognitive science, consciousness, allegory, personification, prosopopeia, Roger Penrose, Daniel Dennett, Gerald Edelman, Michael Conrad, homuncular theory, daemon, computationism, connectionism, semiotics, Lynne Margulis, transgenesis, theriomorphism,

chimaera, sphinx, tetrazoa, akaryotic, eukaryotic, protozoa, protobacteria, cytoskelton, microtubule, quantum theory, brain, pancephalism, archetypalism, Carl Jung, Joseph Campbell, Greg Bear, William Wordsworth, animism, Romanticism, Paul de Man

The Body in the Mind Meets the Body Without Organs: Francisco Varela and Gilles Deleuze Critique Lakoff, Johnson and Turner; Martin E. Rosenberg, Eastern Kentucky University

The influential claims of Lakoff, Johnson and Turner for an epistemological and moral imagination grounded by the bodily basis for meaning deserve to be tested against the work of cognitive scientist Fransisco Varela and the philosophers Gilles Deleuze and Felix Guattari. Fransisco Varela, in his *The Embodied Mind* (Co-authored with Eleanor Rosch and Evan Thompson), argues that consciousness involves two antithetical though perhaps complementary cognitive processes: *bottom-up emergence*, which is necessarily contingent and which involves the spontaneous confluence of heterogeneic lower-order processes into a global state; and *top-down repression* of those heterogeneic processes, often described as a superimposition of categories or schemae onto complex sensory data in a way resonant with the epistemological legacy of Immanuel Kant. So, while the "global state" is indeed a fiction, it constitutes a fiction necessary to ensure the survival of the aggregate, which may refer to a computer or a human being, or even a bureaucratic system.

This distinction becomes interesting from the perspectives of epistemology and social philosophy in the following way: for the first, the emphasis is placed on the total control of the trajectories of symbolic manipulation; any loss of control brings down the computational house. For the second, the emphasis is placed on the connections among elements of systems, the deliberate relinquishing of control of those elements, and the observance of the contingent emergence of new forms of order among the connected elements that might not necessarily be predicted. The top-down exertion of control, and the contingencies of bottom-up emergence, represent epistemological and ideological stances toward cognitive functioning, and in the study of human cognition, there is no question that both processes go on simultaneously, and perhaps even at cross purposes.

I would like to argue that Deleuze and Guattari, among all social philosophers, have played out the ideological implications of these two styles of cognitive functioning through their writings concerning the rhizome and, more important, the Body Without Organs (BWO), a term which refers to what might be called a preexisting condition of wholeness. In other words, the BWO is the Global State itself, a field of immanences from which emanate top-down constraints, the reductio ad absurdum of which is the schizophrenic dream of the rubber body suit without any openings for breathing, eating, defecating. Consistently described in terms of the spherical wholeness of the egg prior to the complete formation of the embryo, in terms of hierarchical strata and of planes of consistency through which rhizomes must propagate but only by avoiding detection, the BWO constitutes the regime through which the exertion of constraints on various becomings may occur. Philosophically represented by Spinoza's ethics, psychoanalytically represented by the analysts' intrusion in the imaginary and symbolic formations of the patient, by the betrayal of desire in the form of the hypochondriac body, the schizoid body, the drugged body, the masochist body, the BWO can be understood simply as the superimposition of constraints on the lower order cognitive processes emanating from the organs of the body or from the nervous, autonomic, circulatory and immune systems.

This correlation between bottom-up and top-down cognitive and social processes may help to frame a discussion of why Lakoff, Johnson, and Turner's assumption of the bodily basis for meaning is finally unsatisfactory. We will begin by examining the cognitive schema and metaphorical and moral extensions of the term "balance," made concrete through a critique of Mark Johnson's reference in *The Body in the Mind* to Michael Polanyi's discussion of the bicycle rider from *Personal Knowledge* as paradigmatic of their claims for the origins of metaphoricity.

Keywords: cognitive science, metaphoricity, consciousness, cognitive error, George Lakoff, Mark Johnson, Francisco Varela, Eleanor Rosch, Evan Thompson, Gilles Deleuze, Felix Guattari, bottom-up emergence, top-down repression, Immanuel Kant, Michael Polanyi, global state, computationism, connectionism, epistemology, social philosophy, brain, body without organs, rhizome, connectivity, heterogeneity, multiplicity, variability, asignifying rupture, cartography, decalcomania, becomingness, radicle-system, linguistics, structuralism, information theory, schizophrenic dream, drug addiction, Spinoza, preformationism, epigeneticism, one-eyed king, two-dimensional reduction, calculus, montage, music

Cognitive Science and Gerald Edelman's Neuronal Selection Model; James J. Bono, SUNY at Buffalo

This paper is part of a larger project concerned with the place of metaphor and narrative in mediating sociocultural exchanges within the sciences. The project is concerned with troubling questions such as the status and mode of operation of "social contexts," the nature of "practice" and its relation to structures of meaning, and the role of "agency" in scientific practice and change.

As a part of this larger project, "Minding the Brain" addresses the work of neuroscientist Gerald Edelman who received his Nobel Prize for work in immunology. Immunological models of health and disease have contributed a whole cluster of new metaphors to those deployed by traditional theories of disease. While militaristic metaphors still abound (in the guise of such fundamental terms as "antigen" or "antibody"), they've been largely overshadowed by newer, more culturally resonant tropes in the discourse of immunology. As in molecular biology, the body has now become a text: a complex collection of intersecting messages and individual codes that presents the immunological system with problems of properly recognizing disparate storylines and reading their often life-and-death meanings accurately.

As in genetics and so many other aspects of our postmodern sociopolitical condition, the tropes and technologies of information have come to dominate much of the immunological discourse of the late twentieth century. Metaphors of "recognition" and "selection" have thus been central to Edelman's own immunological theorization. Such metaphors -- and the tropes of information and self-organization -- along with the cultural work they engender, link together Edelman's immunological discourse with his neuroscientific theories, forming the basis for his contestation of computational models of the brain in the cognitive sciences. This paper thus explores the historical contexts of the neurosciences, including Edelman's Theory of Neuronal Group selection, while it analyzes the cultural work embedded in and performed by such theories.

Keywords: Gerald Edelman, Charles Darwin, neural Darwinism, metaphoricity, discourse, figuration, neuroscience, cognitive science, brain, consciousness, computationism, Oliver Sacks

Friday, October 11, 1:00 - 2:30 pm: Session 3

Session 3A: Scientist's Lives and Writings, Part I (*Habersham Room*)

Chair: Susan A. Hagedorn, Virginia Polytechnic Institute and State University

Visions of a "Tragic Science": The Science Fiction of Leo Szilard; Roy Scott Sheffield, Brevard College

Leo Szilard, like many nuclear physicists in the postwar period, never transcribed his understanding of science and its role in society into the rhetoric of academic political science. Instead, the political context of Szilard's science emerged within a fictional discourse which envisioned science as objective, transcendent, and transmutative. Science was "no place"--not part of any particular time or place, a "better place"--an objective areana beyond the context of politics, and "all powerful"--capable of destroying and transforming the world.

Szilard's fictional discourse defies the neat catagorizations of utopian or dystopian that are usually associated with the study of science fiction. To understand the fictional visions of science contained in his stories, one has to recall the ambiguities of tragedy. Szilard's "tragic science" - informed by a neo-romantic anxiety over power, control, and transformation - perceived of itself as an arcanum and existed in the mythological realm of tragedy in which scientists, endowed with the knowledge of life and death, cannot escape the beauty of their utopian visions or the horror of their nuclear nightmares. Leo Szilard's science fiction displayed this kind of tragic vision as it criticized the MAD (mutual assured destruction) world of the postwar period and envisioned the disfigurement and transformation of the nuclear world by scientists, and it is this powerful vision that informs Szilard's liberal understanding of science and the role of scientists in society.

Keywords: Leo Szilard, science fiction, tragic science, nuclear physics

"Tell Me More of the History": William Carlos Williams and the Diagnostic Narrative; Kathryn M. Plank, Penn State University

The diagnostic encounter is often the locus of interpretation in studies of literature and medicine, primarily because it is in the act of diagnosis that medicine is most "fundamentally narrative" (Kathryn Montgomery Hunter, *Doctors' Stories*). Whether it is Sir William Osler depicting the patient as "text" or Michel Foucault describing "the loquacious gaze with which the doctor observes the poisonous heart of things" in *The Birth of the Clinic*, the clinical diagnosis is defined as a literary act. Doctors interpret signs, patients tell stories, and a narrative of illness is created. The clinical method described by both Osler and Foucault also offers a specific model for the role of the writer as the powerful, all-seeing doctor with a relatively passive patient who is a text to be interpreted, a history to be translated, a body to be dissected and analyzed. In fact, the ultimate form of such diagnosis is the autopsy, where the doctor can finally, in Foucault's words, uncover the "fixed point" of disease, a "specific, irreducible truth," the "forbidden immanent secret" of the individual.

William Carlos Williams, however, undermines this model of the doctor/writer's power. Clinical diagnosis is central to much of Williams's fiction, but the diagnosis is productive only when it destroys its own assumptions. As is tragically clear in "Jean Beicke," the autopsy does not reveal "the knowledge of the individual" (*The Birth of the Clinic*); the still and silent cadaver yields no secrets to the apparently omnipotent pathologist. In contrast, in stories like "Mind and Body" and "A Face of Stone, " patients challenge medical authority and break down the form of the clinical diagnosis. The doctor and patient struggle against each other, and it is in the clash of their conflicting stories that the diagnosis is created. The diagnostic encounter is not just observation and interpretation, but the dual creation of a narrative.

According to Hunter, "The patient's account of illness and the medical version of that account are fundamentally, irreducibly different narratives, and this difference is essential to the work of medical care" (Hunter 123). For Williams, it is also essential to the act of writing. The kind of diagnostic encounter he presents in his fiction-with conflicting stories leading to the dual creation of narrative-is at the heart of Williams's literary theory, and has implications for our reading of not only his fiction, but also his poetry and particularly *Paterson*.

Voltaic Piles and Poetic Similes: The Sonnets of Alessandro Volta; Stuart Peterfreund, Northeastern University

Known principally in our day for his pioneering work in the development of the electric storage battery, physicist and, in the eighteenth-century sense of the term, electrician Alessandro Volta (1745-1827) was also known in his day as a sonneteer. Perhaps the most compendious extant collection of his sonnets currently resides in the Burndy Library of the Dibner Institute at MIT. My presentation will undertake to survey Volta's sonnets, in my own English translation, to ascertain the fit of his scientific and literary thought. Others who will figure in the discussion include the chemist Humphry Davy (1778-1829), also a poet as well as a scientist, as well as such contemporaries of Volta's as John Keats (1795-1821) and William Wordsworth, both of whom had engagements of varying intensity with the sciences of their day, and both of whom worked extensively in the sonnet form.

Session 3B: Discursive Folds/Hybrid Objects: Exfoliations From Calvino [Roundtable Discussion] (*Ardmore Room*)

Chair: Paul Harris, Loyola Marymount University

Panalists: Jim Leigh, University of Oslo.
Anna Botta, Smith College
Jennifer Annick, University of California - Los Angeles

This panel will take the writings of Calvino as a context in which to explore post-disciplinary configurations in literature and science discourses. From brain research to cultural anthropology, architecture to sociology of science, this panel negotiates several disciplinary sites to uncover methods by which such passages may be navigated.

Session 3C: Rethinking Sexual Selection: Gender, Science, and Culture Before and After Darwin (*Brookwood Room*)

Organizer: Lee Sterrenburg, Indiana University

The Birds of Darwin and John Gould: Sexual Selection and Victorian Culture; Jonathan Smith, University of Michigan-Dearborn

Cultural critiques of Darwin's theory of sexual selection have generally focused on the ways Darwin reads patriarchal assumptions about gender roles, particularly as enshrined in the "courtship plot" of Victorian fiction, into nature. Despite the general validity of these critiques, they have perhaps failed to account for many of the gender anxieties that Darwin's *Descent of Man* both raises and ignores. This is especially evident when the visual and verbal representations of birds in Darwin's *Descent* are contrasted with those in the bird books of his friend and contemporary, the ornithologist and illustrator John Gould.

My paper seeks both to answer a historical question--why did Darwin not turn to Gould, who had identified Darwin's Galapagos finches and illustrated the birds in Darwin's *Zoology* of the *Beagle* voyage, to illustrate bird behavior in the *Descent*?--and to trace its significance for the relationship of Darwin's theory to Victorian culture. I suggest that it was Gould's birds that were consistently depicted as raising families in the ornithological equivalent of the "separate spheres." Darwin is indeed interested in courtship, and while he dwells lovingly on birds as exemplars of "civilized" sexual selection, these descriptions may actually read bird behavior wishfully onto human culture as much as the other way around. Darwin seems to ascribe non-violence and female choice as characteristic of bird and human courtship, yet this in turn raises other anxieties: what is the extent of female control over sexual selection? is outrageous display, in plumage, song, or "antics," a guarantee of success for the male? is it, especially in species like the bower bird, the male who must act the flirt, coaxing the female not through ostentatious display but the quiet demonstration of domestic virtues? The constant presence of such questions in the *Descent* speaks to the way Darwin's work, unlike Gould's, exposes the fault lines in Victorian gender roles.

Coquettes and Dandies: Reflections on Social and Scientific Constructions of South American Hummingbirds and Cotingas; Lee Sterrenburg, Indiana University, Bloomington

Critiques of the social construction of birds usually focus upon the projecting of conventionally gendered and patriarchal "courtship plots" onto nature. My paper seeks to complicate those constructivist critiques. I do so by examining Victorian treatments of two families of South American birds, the Hummingbirds, *Trochilinae*, and the Cotingas, *Cotinginae*. Hummingbirds and cotingas expose some tensions and fault lines between Darwin and his evolutionary "allies," including Alfred W. Wallace and W. H. Hudson. When explaining beauty, color, and ornament among hummingbirds, Hudson and Wallace argued for combination of Natural Selection plus "superabundant vitality." Hudson in *The Naturalist in La Plata* (1892) explicitly likens this vitality to John Ruskin's "vital power in organic nature." This turn to "vital power" rather than Sexual Selection enables Wallace and Hudson to revel freely in creationist languages, such as "design" and powers of "creation." Hudson even argues that Natural Selection has ceased to operate among Hummingbirds, thus making them all more productions of (an implicitly) creationist "superabundant vitality." Darwin had countered these moves by being *more* social, rather than less. Darwin draws upon the gender crossings embedded in older metaphorical equations of beautiful birds with Dandies and Coquettes. Take hummingbirds: in no other bird family are colorful male representatives so relentlessly associated with feminine attributes and identities.

Genera names for hummingbirds include *Lesbia*, *Amazilia* (after the Inca heroine of a French novel) and Linneaus' female *Sappho*, *Myrtis*, and *Rhodonis* (a Greek courtesan). Debates circulating among Darwin, Hudson, and Wallace have much to do with the politics and gendering of "admiration" for beauty in nature, both within the sciences and beyond. I explore some of these circulating appreciative and aesthetic currencies. My presentation is illustrated with visual representations of hummingbirds and cotingas from the nineteenth and twentieth centuries.

Queer Darwin: Coquettes, Dandies, and the Theory of Sexual Selection; Richard A. Kaye, New School for Social Research

Far more than most aspects of Darwin's thinking, the theory of sexual selection as outlined in *The Descent of Man* has continued to prove a vexing subject for students of the evolutionist's work. Attacked in Darwin's day for the all-determining role it seemed to grant females in the sweepstakes of courtship, critiqued most recently for its evident endorsement of a coyly delaying and flirting female, sexual selection continues to generate intense debate. In a spirit of skeptical revisionism, this paper argues that Darwinian sexual selection harbored anti-patriarchal energies as well as potentially "unnatural" plots imbedded in nature itself. Implicit in the argument of *The Descent of Man* was the possibility that females might come to so enjoy the momentary power afforded them in the choosing of a mate that they might delay courtship indefinitely. Males, too, also might come to surrender to the rituals of self-adornment so fully that sexual selection could be thrown into disarray.

In this light it is important to recall that early feminists such as Charlotte Perkins Gilman and writers of an aestheticist bent such as Grant Alien warmly greeted Darwin's "discoveries". Alien, who had corresponded with Darwin and even devoted a book to the evolutionist's work, discovered in the scientist's formulations a proto-Wildean ethic for living. "Moralists have always borne a special grudge to pretty faces," insisted Alien, summarizing the conclusions of *The Descent of Man* with an epigrammatic directness worthy of Wilde: "To be beautiful is to be efficient." The intense cultural anxiety surrounding sexual selection as evidenced in the fiction of Thomas Hardy is spoofed in Gilbert and Sullivan's operetta *The Mikado*, where flirtation has become a capital crime Here elaborately attired male samurai--like Darwin's exotically plumed male birds--flirt with the widest array of females.

In the last part of my paper, I consider the ramifications of sexual selection for the emergence of the late-Victorian homosexual subject. Darwin's work has been overlooked in recent queer theory, no doubt because Darwin, as a scientist of strong empiricist allegiances, would appear to have no conception of the "perverse." Yet sexual selection offers a fresh avenue for a discussion of the emergence of homosexuality as a discrete category at the end of the last century. Just as the coquette refuses to take a place in a preordained scheme of nature, such figures as Wilde's Lord Henry of *The Picture of Dorian Gray* refuse to participate in naturalized narratives of courtship. Countering available Victorian plots of procreation, the dandiacal bachelor, like Darwin's female chooser, declares himself a taste-setting aesthete of prolonged, infinite discriminations.

Session 3D: Reading Race, Ethnicity, and Colonialism (*Morningside Room*)

Chair: Rebecca Merrens, Georgia Institute of Technology

Markets and Signs: The translation of environments into resources in Louise Erdrich's *Tracks*; David Brande, Illinois Institute of Technology

In the *Natural Contract*, Michel Serres argues that, in the post-cold war era, "we so-called developed nations are no longer fighting among ourselves; together we are all turning against the world, literally a world war," that "our peacetime economic relationships . . . produce the same results as would a short global conflict." His ensuing analysis, however, makes it clear that this is no new state of affairs. On the contrary, this "world war" is the cumulative effect of long-held and deeply embedded cultural values. The "harrowing revision of today's culture" that Serres recommends necessitates a historically specific critique of these values. Louise Erdrich's *Tracks*, I argue, narrates a history of conflicting approaches to the "natural" world, representing the inextricably economic and environmental nature of the confrontation between Euro-American and Native American cultures. *Tracks* reminds us that conflict between white and Native American cultures is predicated to a large degree on different ways of structuring the world in language and that those different linguistic styles are bound up with different social interests. Erdrich's text illustrates how market forces shape Euro-American culture's response to the land and to Native American tribal societies; that is, her text represents the market's thirst for raw materials and its predatory relationship to tribal culture.

Rethinking Science/Remapping Feminism: Situated Knowledges and Storytelling in Leslie Marmon Silko's Ceremony; Christina Jarvis, Penn State University

The strategic questions and issues within feminist critiques of science have changed radically over the past two decades. No longer concerned with securing equal sex representation within the sciences, current feminist critiques call for a complete rethinking of modern Western science, its hegemonic practices, and its metaphors. Central to these contemporary challenges of technoscience is the reevaluation of "local knowledges" and "ethnosciences" that modern West- ern science has systematically excluded or marginalized.

This presentation examines the possibility of creating a site for "sustainable science" (1) within the particular interfaces of U.S. technoscience and Native American ethnosciences. Specifically, I investigate the intersections of post- modern feminist theory (Sandra Harding, Donna Haraway, Vandana Shiva) and Native American scientific and literary criticisms (Paula Gunn Allen, Vine Deloria, Jr., and Arnold Krupat).

To ground my discussion of these issues, I provide a reading of Silko's Ceremony, which explores the complex tensions between Western science and traditional Laguna belief systems. While the novel seemingly presents an in- dictment of technoscience for its atomic research and destruction of reser- vation land, and of Western medicine for its failure to heal the returning Laguna war veterans, Ceremony also presents a rich subtext of half-breeds, hybrids, and healers that urge Tayo, the novel's protagonist to create new stories that adapt to his modernized world. Through its emphasis on story- telling and creative narrative strategies, the novel not only offers several important alternative visions of nature and the non-human, but also a site for imagining a multiplicity of feminist subject positions with "many kinds of heterogeneous accounts of the world" (2). I conclude by considering the ways in which the novel (and literature in a broader sense) problematizes contem- porary postmodern feminist theories and critiques of science--especially in terms of romanticizing non-Western "others."

1. I borrow this term from Londa Schiebinger. See chapter five, Women in Science: the Clash of Two Cultures. Ms.
2. Donna Haraway. Simians, Cyborgs, and Women: The Reinvention of Nature.New York: Routledge, 1991. 199.

Key words: situated knowledge, ethnoscience, sustainable science

In Third Worlds: Interrogating Postcolonial Theory and Literature; Jay K. Swami, Virginia Tech

This paper is part of a larger project on Postcoloniality, Science, and Literature. My interest is in examining links between science and literature in a postcolonial context, examining so-called Third World Literatures to see how Western and non-Western science are represented. How these representations operate in the cultural spaces of postcoloniality, as well as in the global context of transnational capitalism, is a driving question. For this paper my aim is to theorize relationships between postcoloniality and science. I want to examine postcolonial theory to see how science is coded as Western or non-Western, and to see how postcolonial communities use, resist, and subvert Western notions of science.

A crucial issue here is how science is seen as Western, as an often imperialistic discourse that privileges particular (Western) knowledges, often relegating indigenous knowledge systems to a subaltern status. However, the ways in which social practices of science in postcolonial contexts redefine and recode science as a system that becomes unavowedly hybrid are important. I will explore how ethnicity, class, gender, and local histories fracture the singular notion of a "postcolonial" science, causing significant differences that resist essentializing, making problematic general comparisons of various postcolonial situations, as between Kenya and India.

I will examine texts that deal with the intersection of knowledge systems, as in the clash between Western and indigenous medical practices in Sudhir Kakar's *Shamans, Mystics, and Doctors*. Ashis Nandy's psychoanalytic perspectives on the colonial and postcolonial Indian subject will be deployed in my analysis, as will V. Y. Mudimbe's work on Western and indigenous knowldege systems in Africa. Ali Mazrui's views on the "Africanization" of knowledge in postcolonial Africa, including the sciences, will be relevant in examining postcolonial (or neocolonial) notions of science. Aijaz Ahmad's critique of postcolonial theory in the West will be used in a reflexive examination of the intellectual frameworks operative in my work, and perspectives from Gayatri Spivak will also be instrumental in this regard. I will also appropriate the work of Trinh-Minha and Donna Haraway in interrogating postcolonial notions of science with respect to class, gender, and postmodernity.

Post-, Neo-, and Anti-Colonialism: What's science got to do with it? Kavita Philip, Georgia Institute of Technology

Abstract not availible

Session 3E: Metaphorical Mirrors: The Reflection of Scientific Constructs in Literature and Literary Criticism (*Georgia Room*)

Chair: Richard Doyle, Pennsylvania Sate University

Toward a Novelistic Poetics of Quantum Dynamics: William Gaddis' *JR*; Sean Kinch, The University of Texas - Austin

This paper will analyze a set of possible relations between quantum theory and the poetics of the novel and then apply those connections to a specific text, William Gaddis' *JR*. This project follows from the work of Susan Strehle, Katherine Hayles and others who have located the presence of quantum concepts and terminology in modern fiction. My goal is to expand upon their work in such a way as to aid us in understanding fiction that draws from quantum theory without distorting the science itself.

My methodological principle is that a literary text dictates its own critical models. As John Limon argues regarding a Pynchon short story, "'Entropy,' as a title of a short story, may be taken as an instruction to perform a kind of reading." The quantum novel, as I will call it, explicitly engages quantum theory and shares with it a complex understanding of reality. These texts directly invoke quantum theory, and so we are justified in seeking to understand the thematic and formal impact this new science has on them. In this way, we avoid arbitrarily inflicting contextual models on texts where they are not welcome.

Part of the difficulty in using scientific models to read literary texts is in understanding the concepts themselves before importing them into a new context. The temptation is to draw hasty and distorted parallels between the two modes of thought, which results in misleading or grossly inaccurate generalities (a criticism that I would make of Fritjof Capra's *The Tao of Physics*, for example). In order to discuss how novelists use concepts from quantum mechanics, I will have to describe the scientific concepts first, which is complicated by the fact that there is no consensus about their meaning. Two of the most provocative aspects of quantum mechanics are the uncertainty principle and the attribution of wave functions to particles. I will briefly outline these concepts; then I will compare them to the epistemological challenges facing characters in *JR* and discuss the possible ontological ramifications regarding the fictional world.

I will also analyze the structure of *JR* and argue that it ensures that the reader will participate in the epistemological uncertainty and incompleteness that plagues the characters. The narrative focus is microscopic, often featuring exchanges that are far removed from crucial events occurring simultaneously, about which we receive only fragmentary and unsubstantiated information. This concentration allows us to learn a great deal about one aspect of the projected fictional world, the characters' speech patterns and the breakdown in communication, at the expense of physical descriptions and other textual evidence we conventionally expect from fiction. Furthermore, we find that the greater the text telescopes onto a discrete set of interactions, the less we can know about what happens outside of that frame.

Finally, I will assess what we learn by using quantum mechanics as a model for reading *JR*? In calling it a "quantum novel," I make two, limited claims: 1) that the text invites us to place it in the context of contemporary physical theories, and 2) that by doing so we gain a new appreciation for the complexities of the narrative. I am convinced that novelists will continue to be drawn to the intellectually exhilarating aspects of quantum reality. As Robert Nadeau puts it, "If [quantum physics] is not the stuff out of which great art is made, I suggest we stop looking for it altogether."

Raising Cain: Baudelaire and "Loss of Memory of Initial Conditions"; Maria L. Assad, State University College at Buffalo

Baudelaire is recognized today as the first modern poet of French literature. However, with varying definitions of modernity, his poetic work has become the object of divergent readings. Recent critics agree that Baudelaire's modernity is expressed as self-conscious awareness of disorder; of the strange, the bizarre, and the abnormal as beautiful; and of an essential aesthetic quality in the transitory and unstable nature of the present (W. Fowlie, 1990; I. Valverde, 1994). In his essay "Process and Poetry" (1956), Paul de Man most directly connects the "archetypal modern" of Baudelaire with a fundamental problematic of time. Although the critic still reads the haunting image of time through the logic of an aesthetic linearity, opposing a "naive" Homer and a "conscious" modern poet, his argument is couched in terms of origins lost, of an innate inaccessibility of the future by an endless process of "counting out the hours," and of an intricate play between the conscious subjective and the aesthetic objective.

De Man's argument may be restated, and thereby revalidated, in terms of modern nonlinear dynamics. The models that serve scientists to demonstrate that deterministic systems can evolve into periods of behavior characterized by disorder and unpredictability, also show a loss of knowledge of original conditions. More radically expressed, "sooner or later, the initial knowledge of the system becomes irrelevant" (H.-O. Peitgen 1986). The emerging structure is therefore determined but no longer predictable by initial conditions and is "nearly independent of the identity of the objective system point" (Weissert, 1992) or of all such points which comprise the initial conditions or the initial knowledge. The behavior of the system, traced by its model through trajectories or narratives, leads to an emerging structure whose "distinguishing pattern" (Weissert) does no longer reflect the initial conditions point for point, in a causal relationship. It is, on the contrary, "more than the sum of its parts." Such a pattern is known as a strange attractor; it has its own complex identity which cannot be predicted by the discrete identities of the initial conditions, or by the sum of the initial objective points at the origin of the system, that is, the initial states which evolve along a certain set of rules. The fractal gap between the contextual (or logical) local knowledge modelled in each point of the system trajectories, on the one hand, and the global knowledge of the structural pattern emerging from the trajectories, on the other, is often referred to as a "fuzzy boundary" which carries its own complex "metalogic" (Weissert). Weissert calls this gap a trope and states that "the trope between logic and metalogic may be modelled structurally, yet without totalization."

By closely studying two poems by Baudelaire, "Abel et Cain" and "A une passante", I show that the fractal gap characteristic of nonlinear systems is modelled in the poet's "modernity;" that his agonizing struggle with Good and Evil, and his dandyism are expressions of his despair to be unable to close keenly experienced chasm between an aesthetic system-identity of Beauty which he saw in the objective world around him, and its evolution toward a bizarre and monstrous pattern whose fuzzily perceived complex identity he could only express as "Ennui" or "Spleen." Baudelaire's poetic work is a discursive modelling of this fuzzy boundary. His uncompromising despair and revolt foreclosed any possibility for a logical bridging of the fractal gap, and steeped his work in non-"totalization," forever imprinting on his writing the mark of modernity.

Key Words: Modernity as an aesthetic condition; Nonlinear dynamical systems, theory; Baudelaire, "Les Fleurs du Mal;" Fractal boundaries; "Loss of memory of initial conditions."

The Infinite in Science and Literature; Avery Meinksin, University of Chicago

Science often contends with infinities, either the infinitely small or the infinitely large. Snowflakes, fjords, and the bronchial tree are physical representations of fractals, mathematical constructs that are self-replicating, repeating the same structural pattern to arbitrarily small scales. They are examples of the more general mathematical behavior known as self-similarity. Self-similarity occurs in literature as well. It may be reflected by the theme of a work, or embedded within the

structure of the text itself. I discuss the presence of · fractals and self-similar behavior in Latin American literature and in the traditional literature of eastern cultures. A system may be infinite by virtue of the number of its constituent components as well, as the set of atoms comprising a gas or the distribution of galaxies in the universe. Physicists have developed a statistical scheme for addressing the phenomena that arise in such complex systems in terms of an infinite hierarchy of descriptions. I show how this hierarchy serves as a metaphor for 'slippage' in deconstructive literary criticism.

Session 3F: Disease and Literature I: Psychological Aspects of Self, Ethics, and Illness (*Piedmont Room*)

Chair: Lori Wagner, Lehigh University

Illness and Superstition in Berthold Auerbach's *Diethelm von Buchenberg*; Virginia L. Lewis, Drake University

Nineteenth-century thinking was characterized by an increased trust in the validity of scientific methodology with regard to understanding and combating human illness. Berthold Auerbach, the author of Diethelm von Buchenberg was, as an educated man, well aware of the progress of scientific thought in his age. Therefore, it can have been no accident that he incorporated clearly unscientific illness and cures in this novel about one man's guilty conscience. Berthold uses traditional concepts of evil, guilt, and penance to control the plot of his novel, harking back even to pre-Christian strategies for dealing with and understanding human corruption.

Diethelm's illness is directly linked in the story not only to his guilt as he senses it in his conscience, but also to his guilt in the absolute sense as an arsonist/murderer. The author compounds this association by ascribing it to Diethelm's wife/accomplice as well. All purely scientific medical efforts to cure the protagonist's ills meet with failure, as the only cure allowed by the author is the purging, through death, of an indelibly guilty soul.

Auerbach's insistence in this work on the validity of pre-scientific, faith-oriented notions of illness and salvation constitutes a direct challenge to the faith in science that typified a broad cross-section of the educated bourgeoisie in Central Europe during the mid-nineteenth century.

Suicide in 19th Century Literature and Psychiatry; Susanna F. Ferlito, University of Minnesota

My proposal for this session is to examine the shift that begins to take place through the medical work of the French physician Philippe Pinel (*Traité de la maine*; 1805) and his disciple Etienne Esquirol (*Des Passions*; 1805) on suicide as a societal and psychiatric disorder. While in the emerging psychiatric world of the 1800's, suicide is defined as a mania, a disease, a social disorder, in the literary and theatrical realms it represents a heroic and noble act. Taking examples from the emerging French Italian and French psychiatric discourse and from literary and theatrical texts of the same period, my discussion examines the lag that exists between representations of suicide as a stoic and heroic act which crosses gender boundaries and definitions of suicide as a mental disease in the early part of the nineteenth-century.

Post-Traumatic Stress Disorder in Süßkind's *Pigeon*; James W. Scott, Lebanon Valley College

The paper explores post-traumatic stress disorder as an explanation for the bizarre behavior exhibited by Jonathan Noel in Patrick Süßkind's text *Die Taube* (*The Pigeon*). It argues that the disorder may be said to characterize the entire generation that came of age following World War II and that the writing of the text itself serves a therapeutic purpose. It also views the text as an ironic self-reflection of the *Novelle* genre within the specific context of the German literary tradition.

Imagining a Shattered Ego: Fictional (Auto)biography as Reconstruction; Maia Saj Schmidt, Indiana University

In the wake of Jacques Lacan, literary, cinematic. and cultural critics like Joan Copjec, Kaja Silverman, and Klaus Theweleit have made use of Freudian and Lacanian theories of ego

formation, trauma, intersubjectivity, and the mirror stage as a means for doing cultural analysis and for reflecting on the psychoanalytical theories themselves. Their work has been particularly provocative because of its capable interdisciplinarity as well as because of its ability to use psychoanalytical tools as a means for measuring historical phenomena through the prism of film and document. The thesis of this reading of fictional autobiography in Wallace Stegner's novel *Angle of Repose* is that autobiographical accounts of bodily trauma contribute to the reformation of male subjectivity that has been shattered by historical trauma.

Because autobiography is a genre in which the authors reread and reinscribe their psychological emotional historical and bodily selves in language, it seems a particularly compelling source for psychoanalytical paradigms. The autobiographical text is a fiction constructed by means of memory and imagination, communicating its vision through the Symbolic. I will also consider *Angle of Repose* as an occasion in which to revisit Lacanian theories of ego formation. If the ego is formed through the primary trauma of the mirror stage, what happens if a person suffers another serious trauma which reconfigures his/her relation to the symbolic. Is the mirror stage a static event dependent only on originary alienation from the self or can a person's conception of him/herself be reprojected at a later date? In her chapter entitled "Historical Trauma and Male Subjectivity," Kaja Silverman historicizes male trauma by considering the physical and psychic mutilation of three veterans in WW2 movies.

My work considers the effects of disabling disease on the subjectivity of Lyman Ward, the autobiographical narrator of *An Angle of Repose*. If we consider autobiographical narration as an act of reconstitution of the self and as a resistance to the lack imposed by certain kinds of destructive worldly experience, then autobiography can be read as a desire for mastery over the self, over the body, even as a form of repetition compulsion It is my intention to pair autobiographical writings with psychoanalytical theory as a means for reconsidering notions of "trauma" in an effort to consider the ways in which bodily history reintegrates the self in relation to a trauma.

Friday, October 11, 2:45 - 4:15 pm: Session 4

Session 4A: Narratives and Epistemology of Science (*Habersham Room*)

Chair: Jay Labinger, California Institute of Technology

The Importance of Being Narrative: Selfish Genes and Logical Operators; N. Katherine Hayles, University of California - Los Angeles

The usual story about the development of a scientific field is that the field becomes fully mature only when formalization is possible. The more fully formalization can be achieved, the more mature and paradigmatically "scientific" the field. Physics is harder than biology; biology than economics; economics than literature. In this narrative about the disappearance of narrative, narrative is considered to represent an early pre-scientific stage. This presentation will argue that, on the contrary, narrative persists at all stages of development in scientific fields and performs essential functions that formalization cannot. Moreover, the excision of narrative in favor of formalization is not innocent of cultural implications. As Andrea Nye shows in Words of Power, formalization takes place in specific contexts for particular reasons, even though the act of formalization appears to remove the subject from time, politics, and subjectivity. Paradoxically, it is the very excision of narrative that performs the political work formalization denies through its articulation of logical forms that appear to exist in a purified realm uncontaminated by cultural considerations.

As my tutor texts, I will consider the work of Richard Dawkins in The Selfish Gene, The Extended Phenotype, and The Blind Watchmaker, contrasting his essentially narrative approach with the formalist claims he makes on behalf of genetic encoding. As Dawkins moves into computer modeling, the narrative impulse of his work becomes complicated, for the computer simulations provide narratives which emerge out of the underlying formalisms of computer algorithms. This interplay between formalism and narrative continues in recent work by Tooby and Cosmides, in which they present a evolutionary explanation for evidence showing that logical forms are parsed differently by human subjects, across a wide range of cultures, depending on the narrative contexts in which they are presented.

Keywords: narrative; Dawkins, Richard; gene, selfish; human behavior and adaptation; logic; formalism; Nye, Andrea

The Narrative Structure of Physics; Gregory Keaton, Virginia Polytechnic Institute and State University

What motivates particle physics research? I propose to address this question by looking at a particular line of research through history, the search for the "unified theory," whereby all the forces in nature are understood as different aspects of a single underlying force.

In the nineteenth century, Michael Faraday tried to show that electricity, magnetism, and gravity are facets of the same force. In this century, Albert Einstein spent decades searching for a unified theory, and Werner Heisenberg also worked on the problem. The idea was so compelling that its influence spread beyond physics itself; even Immanuel Kant believed in the unity of forces.

In hindsight, the early attempts at finding the unified force were doomed because the scientists were not even aware of all the forces, that are now known to exist. However, one might optimistically state that we have now discovered all of the forces, and so the time is ripe to try to find the ultimate "theory of everything." The past two decades have seen the birth of a new branch of mathematical physics (string theory) based entirely on this hope. Furthermore, several papers per month are published relating to a slightly less ambitious goal: the "grand unified theory."

Whether or not the various forces of nature do in fact spring from a single source, I believe the search for this source sheds light on the way physics is done. Much of physics is an attempt to boil down many complex phenomena to a few simple laws. These laws are then supposed to explain the phenomena with a certain simplicity and sense of inevitability that is similar to the economy of language found in a poem. Physicists often talk of the "beauty" of an equation, and the aesthetic implied describes poetry equally well.

The search for the unified theory, then, is a search for beauty, based on a poetic vision of how the world ought to be. However, aesthetics seem out of place here, an intrusion of subjective forces in the pursuit of objective truth. Wouldn't it be better to eliminate this bias?

If poetic beauty were removed from physics, what would be left? Perhaps nothing. Perhaps one of the defining characteristics of physics is that it attempts to explain the world in terms of simple and fundamental--elegant and beautiful--principles. In that case, physics like history and many social sciences--is guided largely by the narrative which it seeks to achieve.

Session 4B: Technology, Desire, Pleasure, and Repression (*Ardmore Room*)

Chair: Terry Harpold, Georgia Institute of Technology

The Good, Bad, & Ugly: Giddy Cyborgs & Kathy Acher's *Empire of the Senseless*; Dave Kress, Pennsylvania State University

Is the cyborg a multiple and multiplying figure that connects us to the future in liberating ways? Is it merely a nostalgic fantasy about the future that actually locks us more firmly to a modernist, Western past? In theory, fiction, and film we've seen presentations of both "good" and "bad" cyborgs--liberators and destroyers--but in general neither of these brands of cyborgs escape an essential, modernist drift. Both good and bad cyborgs (and/or their authors) are "giddy" (which I'm not using in the pejorative, gender-coded sense of *trivial* or *ditsy* but as *enlightened, exuberant, reeling, ornate*): modern subjects disguised-decorated with techno-scientific prostheses. In my paper I'll examine the giddiness of good and bad modernist cyborgs and contrast it to the ugliness of a postmodern, terrorist cyborg.

I'll begin by looking at constructions of the good cyborg: Donna Haraway's "A Cyborg Manifesto" in particular provides an optimistic cyborg portrait--even though it does present the cyborg as a creature fraught with danger, the *manifesto's* dream-like reliance-insistence not only on the liberating potential of the cyborg but also its free cost (e.g. "machines that run on sunlight") leave very little room for doubt about the positive potential of Haraway conception of her cyborg, its location in modernity. Other writers share this optimistic conception of the cyborg figure, and I will draw out ways in which cyborgs have been posited as especially powerfully sites for responding to sexism, racism, classism, militarism, et cetera.

Next I'll look at what Bruno Latour might have to say about the sunlight cyborg, in particular his discussion of blackboxes and blackboxing (from *Science in Action*) and his questions about the purity move of modernism (in *We Have Never Been Modern*): I'll ask questions about what is blackboxed in the giddy cyborg, what does the giddy cyborg cost and who pays for it, what resources are depleted in order for the giddy cyborg to exist (or to come into being), which economies are employed to allow the cyborg to function smoothly? Additionally, I'll look at work by theoreticians like John Christie, whose "A Tragedy For Cyborgs" poses some very troubling questions for Haraway's cyborg in particular, especially in terms of its metaphorical nature and its fictional representatives and/or representations. But while in many ways these foil-portraits lead to more sinister cyborgs, they're ultimately no less giddy: though more troubl(ing/some) they equally avoid certain material snares both in terms of cyborg cost and their tendency to ignore the material bodies of its operators.

After placing both good and bad cyborgs in a modernist West, I'll juxtapose Kathy Acker's deployment of a postmodern cyborg figure in *Empire of the Senseless* in metaphorical terms (the figure of Abhor, a female cyborg, who is half black and half machine) and structurally: Acker's well-known "play-giarisms" (in this case *Huck Finn*) works her novels like literary (or truly metaphorical) cyborgs. Unlike more giddy-modern, theoretical approaches, Acker's fictional/metaphoric postmodern perspective denies the semantic reality and linear sense of progress that often haunts the giddy cyborg while at the same time affirming the messiness of material and bodies. Abhor/*Empire of the Senseless* are neither good nor bad cyborgs but are perhaps better described as ugly: more subversive, more terroristic than either the good or the bad.

Helenic Powers: Postmodern Desiring-Machines; Harvey Quamen, Pennsylvania State University

> "Everything is a machine," write Deleuze and Guattari in their *Anti-Oedipus*. "Producing-machines, desiring-machines everywhere, schizophrenic machines, all species of life: the self and the non-self, outside and inside, no longer have any meaning whatsoever" (2).

By looking at a recent example of contemporary cyberfiction-Richard Powers' *Galatea 2.2*--I'd like to explore the postmodern literary vision of desiring-machines. While Powers' novel describes an attempt to program a computer to take a Master's Exam in English Literature, he explores several of the issues surrounding technology and subjectivity: boundaries between Self and Other, the possibilities of consciousness without a body, the necessity of a being's self-awareness in order to possess intelligence, and the plausibility of emotional investments between the human and the non-human. In Powers' novel, desire itself becomes the product of a union between the human and the computer--we might say that desire itself is the output of Powers' computer program. As Deleuze and Guattari suggest, "Something is produced: the effects of a machine, not mere metaphors" (2).

The title of Raymond Barglow's 1994 book, *The Crisis of the Self in the Age of Information*, characterizes our era in a rhetoric of emergency. Although Barglow cites five criteria necessary for the stable "self," I'd like to consider only one in this paper: the criterion of stable boundaries. Computer technology breaks down those boundaries between, as Deleuze and Guattari say, "the self and the non-self, outside and inside" by exploring the possibilities of a bodiless self. At stake in cyberfiction, then, is a redefinition of subjectivity, a reconsideration of a self that is destabilized by technology and that, perhaps unlike a unites only periodically with machines in order to produce a postmodern desiring machine. We might consider the effect not so much as a crisis of the self than as something less apocalyptic: as an evolution of the self, perhaps, or as a demythologizing of traditional notions of subjectivity.

Here, too, I'd like to reconsider desire not as a Psychoanalytic phenomenon of lack, but itself as a product of human interfaces with the machine. Romantic nostalgia for an immortality--the stereotypical and clichéd ruse of science fiction--is interrupted by what Deleuze and Guattari call the Body without Organs: "Every coupling of machines, every production of a machine, every sound of a machine running, becomes unbearable to the body without organs" (9). As Donna Haraway's "Cyborg Manifesto" has reminded us "The privileged pathology affecting all kinds of components in this universe is stress-communications breakdown." My paper, then, will look at literary versions of postmodern desiring-machines and consider the ways that various pathologies of stress--bodies without organs, communications breakdowns-interrupt the production of desire.

Keywords: computers, artificial intelligence, Richard Powers, Deleuze & Guattari, cyborgs

Screw Intimacy: Pleasuring Technology? Stephanie A. Smith, University of Florida - Gainesville

You can get it wet. hard and soft or floppy; you can load, mount, MOO, or jack-in; there are views, insertions, tools; there are touchpads and joysticks--in other words, as it has been baldly apparent since the first ill-fated osborne became an "affordable" consumer durable, the era of the pc would be descriptively shaped by the same metaphorical terrain as that activity which the United States government has sought to legislate online: the pornography industry. Of course, this is not to say that hard. wet or hard are adjectives either specific or restricted to the 'net or to porn; still, the electronic space called the internet has proven to be a home(page) away from the home for the sex industry--a lucrative new "street" to walk, and, even if the speed of this superhighway can be economically lethal, there's always another link. From the supposedly orgasmic, safe-sex pleasures of teledildonics to chat salons, where conversation, as it once did in the late 19th-century, signifies a form of intercourse, surfers ride the net or gender-bend in cyberspace. Hyped as the new frontier

of invention, the "intimate world of online chat" promises, as Bill Gates has done, to utterly "abolish distance" (1).

But in all this heady rush, it is nearly impossible to hit pause and ask: what. exactly, does intimacy mean Since the mid-1970's, intimacy has been described as a fragile but increasingly invaluable quality--"the one thing that all human beings need to feel human" (2)--as well as that which is most awfully lacking in American lives; popular wisdom claims that men fear intimacy while women look for it in vain and so most married couples remain intimate strangers (3). Indeed, we are counseled that there is an "art of intimacy" (4) and that it is peculiarly available online, where all the recalcitrant impediments to "true" intimacy will vanish.

However, while webheads proclaim the possibilities for limitless intimacies. what is also evident across the 'net is the rise of a profoundly conservative regime that depends upon intensifying the privatization and commodification of "intimacy." Trading on euphemisms or slang that became the language of a new sexual currency during the so-called "sexual liberation" of the 1960's, the Web serves as a site for an intensely commercial "deployment of sexuality" (5). The commodified subjective and subjected products of this intensification are surfers in the most literal sense for, as acrobats of highly specialized technological skills, the skilled surfers of 1996 will soon be rendered obsolete "throwaways" (6). Only very few (sex)workers will be able to retool quickly enough to keep up with spiraling demand.

This paper. then, seeks to screw intimacy, so to speak, by examining how the internet's promises of (and demands for) a regime of intimate absolutism is not only an extension of an intimacy industry that surfaced as such in the late 1960's--pornography being one permutation of that industry--but is also a demand already firmly ensconced as a commodified "need" in the wake of the industrial revolution. In demonstrating how, and seeking to explain why, pornography has determined the "nature" of cyberspace. I will argue that this pornographia signals the inscription of a commodified private onto public space, producing the very limitations the Web claims to elude, birthing regimentation in the name of freedom.

1. See *Newsweek*. Nov. 27, 1995, p.54-74; and *Virtual Reality*. Nov. 1995.
2. Phyllis Theroux, "Family Secrets" on *The Jim Lehrer Newshour*. Feb. 21, 1996 (transcript). There are a score of books to cite here, that this paper will treat; see Anne Wilson Schaef, *Escape from Intimacy*. New York: Harper & Row, 1989.
3. Thomas Patrick Malone and Patrick Thomas Malone, *The Art of Intimacy*. New York: Prentice Hall, 1987.
4. Michel Foucault, *The History of Sexuality: Part I*. New York: Vintage, 1978.
5. Evan Watkins, *Throwaways*. Stanford, CA: Stanford University Press, 1993.

Rape and Technology in Postmodern Fiction: The Return of the Repressed; Sharon Stockton, Dickinson College

A marker of "high" postmodern fiction is the extent to which "the subject" comes into question. In mainstream texts like those of Pynchon and Barth, this instability is most generally staged through parody: the (male) sovereign subject is configured as pure simulation, laughable in its persistent self-belief. The fictional space thus vacated by the authentic modern subject (the striving, tortured, or alienated protagonist) is filled by--among other things--the corporate technological body. It is in this way that technology comes to usurp traditionally masculine prerogative, and the ironic protagonist is relegated to the unstable and linked positions of voyeur and/or object-woman. This pattern controls, for example, Pynchon's *Gravity's Rainbow*, Earth's *Giles Goat-Boy*, DeLillo's *White Noise*, and Baker's *The Fermata*. This paper asks what "subversion" might look like within this narrative structure. The tentative answer is that it looks a great deal like rape--if postmodern rape, replete with irony so heavy that the humorous and the monstrous fade into one other.

Session 4C: Critical Issues in Teaching and Curriculum (*Brookwood Room*)

Chair: Stephen Weininger, Worcester Polytechnic Institute

Critical Issues in Teaching and Curriculum; Elizabeth Woodworth and Alan Shepard, Texas Christian University

As teachers of literature and science courses, we have encountered the difficulty of obtaining texts. In response, we have begun to assemble an anthology that might be suitable for many literature and science courses as well as other interdisciplinary courses with emphases in literature and science. We are also considering the possibilities of a critical reader and a writing guide.
In the months prior to the annual meeting, we propose to survey the members of the Society of Literature and Science to 1) determine members' interest in such a text(s); 2) get the advice of others who have taught or are teaching literature and science courses, including sample syllabi and comments on the assets and liabilities of texts used in those courses; and 3) solicit suggestions as to what SLS members would like to see in an anthology of literature and science, in a critical reader, and/or in a writing guide.

At the annual meeting, we would share the results of the survey with the members who helped make it possible.

Constructing Vocabulary In the Sciences; Ann Bunting, Temple University

The general social practice in schools in the United States has been to train reading using fiction or lay versions of technical information resulting in inadequate skills acquisition necessary for reading specialized or technical literature. Students often find themselves frustrated with interdisciplinary study at the high school and college level without the language skills necessary for crossing disciplines. One technique for comprehending language use in other disciplines is to see that various discourse communities not only have unique vocabulary, they also use mainstream words or word combinations in particular adaptations or have entirely different meanings for such words. Readers easily recognize new vocabulary used by a discourse community. Comprehension is a matter of using an appropriate dictionary. The more difficult situation is to determine when a community is using a familiar word in a peculiar adaptation such as the word "adjustment" which has different meanings for a car mechanic, orthodontist, chiropractor and the Internal Revenue Service, or has developed a specialized meaning for an otherwise commonly used word, such as the field of law has done with "consideration" and "fee." Discourse communities also have developed special meanings for combinations of otherwise familiar words such as "organic chemist," "infield fly," or "cause of action." Decoding socially constructed usages across disciplines is not just a matter of learning new vocabulary, but of learning of context-dependent applications of familiar words, specialized meanings for familiar words, and of recognizing new combinations of words which make a meaning itself unfamiliar. Approaching foreign linguistic terrain with the understanding that the particular community constructs vocabulary in unfamiliar ways provides a means of individual investigation into language use enhancing learning across disciplines.

Teaching Science and Literature in the German Studies Curriculum; Lori Wagner, University of Pennsylvania

This presentation examines how to incorporate the study of science and literature within the currently developing concept of the German Studies curriculum. Various possible 'definitions' of 'science and literature' as an area of study are discussed and compared with the changing goals and roadblocks of the university system, the traditional foreign language curriculum, and new ideas for the emergence of a curriculum based in interdisciplinarity, cultural awareness, and discursive communication.

The pros and cons of viewing science and literature and its possible methods for research or analysis as an area of cultural studies is approached, as well as the limitations and advantages of subsuming such a complex and interwoven field under the rubric of 'German Studies'. Additionally, the possibilities for developing new methods of pedagogy and a wider understanding of science and literature is examined within the context of the idea of 'curriculum' and departmental disciplinary boundaries. The study seeks to present a course of study and method of pedagogy therefore that will be able to address interdisciplinary and multicultural issues, decide what 'science and literature' means both for German Studies and for students of both scientific and literary analysis, and to represent the subject in its multiplicity as well as to work within the confines of currently inescapable curricular and university boundaries. Such a course should ideally be able to work within as well as to transcend its curricular distinction. While acknowledging the difficulties of such an aggregate challenge, the conclusions of the paper seek to suggest and discuss one possible approach toward this ideal.

The presentation will include a possible course description, insight into views of science and literature within a German cultural context, and possible approaches to teaching the course, including selected issues and projects for students. A sample syllabus and reading list will be provided as a supplement.

[Teaching] Science as Culture: The Examples of Copernicus and Einstein; Don Watt, State University College, Geneseo, New York

It is a truth universally acknowledged in today's American academy that we need holistic studies to balance the fragmentation promoted by over-specialization. The rightful place for these studies is interdisciplinary Humanities courses. To be authentically holistic, though, such courses need to include some representation of the force which revolutionary scientific discovery exerts in any milieu's larger cultural context. Fragmentation is best addressed (and avoided) by considering major scientific ideas as they are related to and connect with seminal developments in the arts, social sciences, and Humanities. The effect of Copernicus' heliocentric universe on the Renaissance, for example, needs to be understood alongside the breakup of the guilds and the system of manorial estates, the challenge to the monolithic sway of Catholicism posed by Luther, the mind-boggling impact of the geographical ventures of Balboa and Magellan, and indeed the iconoclastic erotic poetry of John Donne. A holistic account of Copernicus' place in his larger cultural context needs to draw out the analogies between the revolutionary changes in economics, religion, and literature on the one hand and the dismantling of the Ptolemaic universe on the other. A similar argument might be advanced for placing Einstein in the context of, say, Picasso, Joyce, and Stravinsky. The unsettling dynamics of relativity find their analogies in the discordances of *The Rite of Spring*, the cubist perspective of "The Women of Avignon," and the multiple narrations of *Ulysses*. One might argue, to push the point, that Einstein has an effect on his scientific milieu comparable to that of World War One on the chivalric ideal. The impact of Einstein needs to be measured alongside the advent of modern psychology (Freud, William James and the stream of consciousness:, and the pervasive influence of existentialism. Similar cases might be made for Newton and Darwin. Whether or not C. P. Snow's "two cultures" still holds sway, one of the erring needs of our curriculum today - and perhaps an essential key to retaining our grasp of the kaleidoscope of contemporary existence - is to cultivate the habit of understanding science as an integral part of our, or any age's, largest cultural milieu.

Models, Metaphors and Representation: Critical Issues in Informal Science Education; Paul Vanouse, Carnegie Mellon University

Edutainment and educational multimedia have been deemed (perhaps rightly) by many as out of date textbooks, disguised with flashy and seductive packaging. The old warning "you can't judge a book by its cover," takes on new meaning in regard to these new forms. Many of these products are graphically and technically enterprising, but shallow in pedagogical innovations. A second

dilemma is that educators and funders, particularly in the sciences, have often felt threatened by recent theoretical practices, for example deconstruction, "post-colonial" discourse and "new historicism,"--relativist theories with significant educational ramifications.

As a director of educational, multi-media projects for science museum audiences, solving these dilemmas could have a positive impact on pedagogical strategies in primary and secondary education. Ignoring them may cement harmful inaccuracies.

In this paper, I discuss two projects on which I have worked. The first is "Journey Into the Living Cell," which was funded through the National Science Foundation's Informal Education program and completed in 1995, and the second, recently begun, is a project which investigates theories of how the brain functions. The first project was a collaboration with researchers in the fields of Biology, Computer Science, Art and Education. Our finished production contained many of the most current concepts, research, images and simulations pertinent to the study of cell biology, but it was limited in its application of similarly important breakthroughs in fields engaged in Cultural Studies. In our current project on the brain, we hope to include interdisciplinary theorists with interests in the "science/culture" debate. By doing so, we hope not merely to "patch up" an existing scientific narrative, but to create a new one in which scientific knowledge is not isolated from culture. Scientific discovery and technical invention do not occur as quasi-religious miracle, but as part of a larger intellectual framework in which they both influence and are influenced.

In discussing these projects, I focus on issues pertaining to the use of models, metaphors and representations of biological structure and function. Although I posit many findings discovered during these projects, my primary aim is to unearth important questions in scientific education and to propose several possible theoretical positions from which to approach them.

Session 4D: Automatons, Monsters, and Vampires (*Morningside Room*)

Chair: TBA

Vampires and Entropy: Heat Death and the Un-Dead; Cyndy Hendershot, Texas Tech University

For my topic I propose to examine ways in which vampires gained new cultural resonance for a late nineteenth-century society obsessed with apocalyptic visions of the death of the sun due to popularizations of the Second Law of Thermodynamics. The apocalyptic nature of *fin-de-siècle* imaginative speculations on entropy find a correlation in imaginative literature which invokes both the literal vampire and vampiric tropes. The ability, and indeed, necessity, of vampires to survive without the sun possibly make them a new species suited to a world in which the sun is dying. Bram Stoker's use of evolutionary rhetoric to describe the vampire in *Dracula* converges with thermodynamic metaphors of a sunless world, a world which is ruled by the vampire. Reanimated, dead, cold bodies hence become the "appropriate" bodies for a world facing heat death. As Bruce Clarke argues, "the material cosmology of thermodynamics had posited energy specifically, sunlight--as the origin of life: a dying sun would bring death to all living things." This is precisely what vampires do; yet they also allow the dead to exist in a realm of the undead. One of the fundamental ideas lying behind nineteenth-century thermodynamics is the insight that heat always flows from warmer to cooler bodies. Vampires, as cold, pale creatures who absorb human vitality, literally drain the life (energy) from their victims, were particularly suited as vehicles to express late nineteenth-century anxieties over heat death.

I propose to examine two late nineteenth-century texts which use the vampiric metaphor to explore the implications of thermodynamics, Bram Stoker's *Dracula* (1897) and H.G. Wells's *The War of the Worlds* (1898). In both works the evolution of the new vampiric species (vampires in Stoker; Martians in Wells) implies a devolution, a reversion necessary to make the vampire the new species of the entropic future.

Gothic Science: Teratology; Karyn Valerius, SUNY Stony Brook

Teratology, literally the study of monstrosity, achieved the status of a positive science in the 19th century. Its practitioners collected specimens of abnormal formations in plants and animals, as well as spontaneously aborted pathological human fetuses, in order to classify these "monsters" according to morphological type and to discover the causes for each type of monstrosity in either heredity or the environment. Historically, monstrous offspring had long been a topic of discussion for natural historians, who debated whether natural or supernatural cause could account for monstrosity. As a new positivist science, teratology differentiated itself from natural history by understanding monstrosity as a natural pathology rather than a supernatural sign and by limiting its purview to observation of specimens. Thus, teratology excluded from relevant evidence hearsay, folklore, superstition, and history, all of which were previously included in natural history treatises on monstrosity.

Given the popularity of gothic fiction in the United States at this historical moment, I wish to argue that fiction became the site for all those articulations regarding monstrosity excluded by teratology as a scientific discipline. This claim might seem to replicate an opposition between literature and science in which positivist study belongs to science and imaginative or creative expression belongs to literature. I propose instead reading teratology and gothic fiction as two instances of a discourse of monstrosity. Rather than positivism differentiating between teratology and gothic fiction, it is a common concern they share. For instance, the resolutions of many gothic novels offer realistic explanations for the strange, seemingly supernatural events which previously terrified their readers. Thus, as closely related rather than opposed modes of discourse, gothic fiction and teratology share several agendas: 1. Each seeks to explain the natural causes for

phenomenon once understood as supernatural. 2. Each functions normatively to affirm the boundaries of human embodiment for the observer, scientist or reader, of the spectacle of the monster. 3. In the discourse of monstrosity, of which teratology and gothic fiction are both instances, the figures of the scientist and the romantic artist are not opposites but mirror images of one another. Both scientist and artist are potentially feminized figures who threaten the racial and gender hierarchies justified by biological essentialism through their ultimately failed attempts to appropriate generation. Both scientific and creative productions result in dangerously hybrid offspring--the literary text or Frankenstein's monster. I will demonstrate these claims in readings of Stephen Crane's "The Monster" (1899) and Franklin Pierce Mall's *Origin of Human Monsters* (1908).

The Evolution of Fear and Loathing in Literature about Automata; Kevin LaGrandeur, Hofstra University

An interesting aspect of literature about the creation of automata is that, in early stories, the creations seldom pose a threat to their creators. Indeed, in stories that purport to be true--such as the medieval Jewish Talmudic legends of the golem--the focus is on the act of creation itself rather than on the post-creation actions of these automata. Only in the 16th and 17th centuries do we see the advent of a threat from the creatures of scientist/magicians: the humanlike demons that Faustus calls up, the creaturesthat Prospero commands in *The Tempest*, and the golems of the 17th century become dangerous to their masters. By the 19th century, literature depicts artificial humans as threats not only to their creators, but to the human race. Victor Frankenstein, for instance, is worried that, if he creates a mate for his creature, the two might populate and eventually displace weaker humans. And, in *Blade Runner*, concerned humans try to "retire" androids before they blend in too well with the general population.

My presentation explores the evolution and growth of this sense of threatin the literature of humanoid creation. The thesis is that there is aparadox of utility: as time progresses, the creatures in literature becomeless the stuff of legend and more t he stuff of real-life, and literaryprotagonists depend on them more for their emotional and practical needs. Thus, later creatures resonate increasingly with the slave-systems theempirical and industrial revolutions make possible. As a consequence, modern literature increasingly reverberates with a combination of twofears--the oppressor's fear that Hegel alludes to in his discussion of the master-slave dialectic, and a form of Oedipal fear that the artificial "child" will violently displace the parent-creator.

Session 4E: Print and Its Discontents: Literature and the Ecology of Media (*Georgia Room*)

Organizer: Michael Wutz, Weber State University

Anticipations of Film and TV in Literature; Elmar Schenkel, Universität Leipzig

The literary roots of film have been illuminated by early film pioneers such as Griffith and Eisenstein, who have shown to what extent they are indebted to Dickens in terms of technique. I wish to concentrate on two further aspects: film has from early on been linked to fantasies of time machines, and both machines show remarkable parallels, not the least because both are rooted in a new sense of speed that had become effective with the advent of the railway. Relevant authors in this context will be Jakub Arbes, the Czech writer who produced the first literary time machine in 1877; H.G. Wells' "The Case of Davidson's Eye" will serve as an illustration of another type of anticipation: long-distance usual communication as form of psychopathology. Along with Jules Verne's "Le chateau dans les carpathes," the story shows that the emerging media had an impact on the reorganization of sensory perception in the West and were associated with the production of traumata and hallucinations.

Keywords: film and literature, time machines, psychopathology, media/sensory perception

Articulate Flesh: Language, Media, and Embodiment in Lawrence; Michael Wutz, Weber State University

This presentation attempts to establish the relays between the media of the late nineteenth century and the notion of(dis)embodiment in the work of D. H. Lawrence. Specifically, I want to trace, not so much Lawrence's well-known romantic-modernist critique of industrial technology, but rather his resistance to the storage and communications media of his day: the gramophone, film, and radio. Anticipating mediatheoretical insights of the 1970s and 80s, Lawrence came to see in the new recording and transmission technologies not only a threat to the culture of print, with the symbolic system of writing competing against the nonsymbolic media on an enlarged marketplace of inscription. More importantly, Lawrence saw in the very invention of these media a sign of the times, a sign that the modern human body is in danger of being emptied of its physicality.

In the second part of the presentation, I would like to combine Lawrence's notion of (dis)embodiment with his position toward the typewriter and his assumptions about gender. While Lawrence had a brief romance with a Smith-Premier #2--at one point even claiming that they "had sworn a Blutsbruderschaft"--he was fundamentally opposed to the mechanical intervention in the production of script. Lawrence saw the act of writing intimately bound up/originating with the body, whereby the hand (as perceptual extension of the body) becomes the logocentric nexus mediating between mind and paper--the physical threshold whereby the self inscribes itself on paper. Conversely, Lawrence understood typing to be a derivative, predominantly female, activity, a form of re-creation rather than creation, that reproduces his (frequently disturbing) theories of gender on the level of inscription systems. If women, "when they speak and write, utter not one single word that men have not taught them" it is only "natural" to see in the female body a type of inarticulate flesh (as opposed to the articulate flesh of the male body) that can generate words only in reproducing--in typing--them.

Keywords: media, (dis)embodiment, the typewriter, gender & technology, D. H. Lawrence

Hypertext Hotel Lautrèamont; Joseph Tabbi, University of Illinois-Chicago

My title combines two literary titles, from Robert Coover's collaborative online project, the "Hypertext Hotel," and John Ashbery's sestina, "Hotel Lautrèamont " (whose opening line cites "research [showing] that ballads were produced by all of society"). In my paper, I propose to identify a common aesthetic implied in both works (and anticipated in the work of Lautrèamont -Ducasse himself). Considering both electronic and print texts, the paper explores what happens when longstanding literary themes involving collaboration, authorial disappearance, and the production of narrative through mathematical constraints all become realizable in a literal sense, through the new technologies of hypertext writing.

Keywords: hypertext, media, Robert Coover, John Ashbery

Text as Transport: Modern Literature and Technical Mobilization; Stefanie Harris, Emory University

The topic of my paper proceeds from a simple proposition of Friedrich Kittler: scientific supports control all so-called perception of text. In other words, any text -- literary. theoretical. philosophical -- is in linkage with other discourses of scientific status. As a network, these discourses support each other and structure 'sense' in the absence of a universal reference. From this theoretical framework, the impetus of my paper is a specification of how the various scientific supports or technologies of a time-period influence their literary contemporaries and where these extra-textual mechanisms are to be located in writing. And further, how does technology influence the way in which we read and theorize about text? With this investigation. I do not mean merely to engage in a comparison of different media; rather, my question is in simple terms -- How do contemporaneous technological regimes affect narrative strategies of representation and systems of reference? At what point do technological metaphors function in excess of themselves, such that the structure of the text adopts the logic or rationality of the technology in question?

In this paper I will explore these questions through an analysis of two early twentieth century German texts, Alfred Döblin's *Berlin Alexanderplatz* and Frank Kafka's *The Burrow*. These texts have been chosen because of the manner in which the space of writing involves the negotiation and recuperation of travel, the technique of passage -- in Döblin, a network of multileveled commuter transportation systems (elevated train, street car, underground), and in Kafka, a subterranean network of tunnels and connecting rooms. The texts do not merely write about or describe these technical spaces, but rather this technology is constitutive of the text. Writing thus serves as the mobilization of an entire network or web, through which information is continuously transmitted and stored. And the words of writing, the tools which continuously reconstruct passage, function as elements of a machinic network.

Indeed the Materiality of communication is reiterated throughout Döblin's text: "Words. resounding waves, noise-waves, full of content, rock to and fro through the room The text thus accumulates increasing amounts of noise which do not describe narrative structure or solution. but comprise a network of information, both textual and extra-textual. And this 'air traffic parallels the commuter traffic of the various transport systems around the Alexanderplatz -"The words come rolling up to us, we must be careful not to get run over; if we don't watch out for the autobus, it'll make apple-sauce out of us." Indeed Döblin once characterized the reading eye as the "express train" which travels the page. And in Kafka, the scene of writing is never a stable route, but the word which burrows, the writer as burrower, continually engage the process of their technical function.

In light of the narrative re-structuration of spatial and temporal experience, the texts insist on a re-evaluation of the questions -- what is the relationship of technological metaphors to writing metaphors of writing to technology, and technologies of writing to the human subject? An evaluation of the texts reveals the extent to which writing must engage

the extra-textual supports of mobilization and travel, extra-medial channels which both influence and compete with writing as transmission and record of experience. This 'media competition' is important because it reveals the spaces or gaps in which writing is not the perfect trace or univocal recording of experience, but rather must redefine its own communicative structure by pointing to other experiential modes.

Session 4F: Post-Deadline and Alternate Time Session (*Piedmont Room*)

Friday, October 11, 4:15 - 4:45 pm: Refreshments (*Habersham Foyer*)

Friday, October 11, 4:45 - 6:15 pm: Session 5

Session 5A: Rhetoric of Science (*Habersham Room*)

Chair: Mark Hausen, Southwest Texas State University

Inventio ex machina: Machines and Textuality in the Work of Blaise Pascal; Steve Bold, Boston College

My work addresses the relationship between scientific methodology and rhetorical invention in the work of Blaise Pascal. In my paper I describe briefly the rhetorical dimension of several Pascalian machines: the hexagramme mystique, the machine d'arithmetique, and the triangle arithmetique. In essence what I demonstrate is that these mechanisms are inventive (rather than analytical) tools-tools derived, moreover, from a long tradition that links rhetorical training and the development of scientific methodology. The legacies of Ramus, Bacon, and Descartes in particular will help us to understand Pascal's personal, variegated project, as will a brief discussion of the meaning of "invention." These results will finally be compared to what is known or believed about Pascal's rhetoric from the evidence of the Lettres provinciales and the Pensees. In particular, these theological, philosophical, and moralist texts reflect Pascal's interest in perspective, combinatorics, probability, and meta-discursively based strategies of persuasion.

Keywords: Pascal; Rhetoric; Invention; Geometry; Artificial Intelligence.

A Unity of Knowledge: The Rhetoric of Complementarity in the Philosophical Writings of Niels Bohr; Shelly Jarrett Bromberg, University of Texas - Austin

Niels Bohr's concept of complementarity, as the physicist Leon Rosenfeld has observed, "is no system, no doctrine with ready made precepts. There is no via regia to it; no formal definition of it can even be found in Bohr's writings." Rosenfeld suggests, instead, that complementarity perhaps is best understood as Bohr's unique form of dialectic concerned with the "gentle art of the correct use of words." Bohr's interest in the efficacy of language, however, was not a revival of the romantic ideal of one word one concept correspondence. Rather, throughout his writings, spanning some forty years, he returned, time and again, to questions of how we shape language to communicate experience, whether it be of quantum descriptions or of everyday reality.

This essay seeks to contribute to the study of Bohr's philosophical writings by focusing on the possible rhetorical aspects of complementarity. To best develop and explore the rhetoric of complementarity, the work of Kenneth Burke, who shares many of Bohr's fundamental insights into the nature of language, serves as a productive frame of reference for Bohr's views on the communicative role of language. Moreover, a comparative analysis of Bohr's concept of complementarity and Burke's theories of rhetoric illustrates how their similar approaches concerning dialectic and rhetoric provide for the inclusion of new and significant perspectives that contribute to a unity of knowledge shared across disciplinary and cultural boundaries.

Keywords: Complementarity, Niels Bohr, Quantum Philosophy, Scientific Discourse, Literary Theory, Science

A Post-Newtonian Reading of Foucault's *Discipline and Punish*; Suzanne E. Shimek, University of California - Los Angeles

In *Discipline and Punish*, Michel Foucault frequently borrows metaphors and terminology from the physics of mechanics, or what might be termed "Newtonian" physics. Foucault writes about disciplinary methods that extract the "maximum time and force" from bodies; he likens the forces

brought to bear on human bodies by disciplinary institutions to the force of gravity. Certain of Foucault's phrases could be drawn directly from a classical mechanics textbook. Interwoven with this Newtonian vocabulary, however, is another set of terms borrowed from a different realm of physics, a physics that I would describe as post-Newtonian. To define his own methodology and paradigms, Foucault often uses such words as "field," "matrix," and "network." The terminology Foucault uses also often coincides with certain vocabularies from twentieth-century physics, notably from quantum theory and chaos theory.

In this paper, I want to explore the implications of Foucault's two vocabularies in light of certain shifts in physics theory. If, as Foucault posits, no discourse is disinterested or coincidental, then Foucault's terminology represents a deliberate power strategy, an attempt on the one hand to replicate in language an industrial/capitalist system in which the human body is treated as mechanism, and on the other to subvert that mechanistic system through an alternative discourse. Foucault himself remains vague about his professed reasons for writing Discipline and Punish (a characteristic vagueness for which he has been much criticized). The text of Discipline and Punish, however, has at least one very specific function. By his very method and language, Foucault resists categorization and normalization. In a similar way, the shift in the language of physics that started to occur early in the century marks a non-deterministic revision of pre-existing scientific discourse. Foucault resists a traditional historical discourse oriented toward defining the "truth" about cultural events, toward establishing a definitive cause/effect link between events, toward defining what is "natural" and "ordinary." Some discourses of modern physics diverge from a Newtonian theory that includes the assumption that an observer can be separated from the system observed, that there is a linear, proportional cause/effect relationship between forces and effects, and that separate elements of a system can be extracted and studied in isolation without affecting the system as a whole. I link Foucault with the discourse of physics not simply because physics provides a convenient metaphor for describing Foucault's language but also because shifts in science are deeply inter-related with the shifts in penal methods Foucault describes.

The Mad Science of Critical Theory; Rebecca L. Moss, University of Florida

"Mad Science" is a powerful emblem of twentieth-century ambivalence towards scientific knowledge. In moving towards more scientific models of inquiry, literary criticism has become an additional field in which the threat of *mad* science may surface. In this paper, I will explore how recent critical theory may be characterized as mad science. I will show how developments in critical theory have played out as a narrative of mad science (that is, echoing such stories as *Frankenstein*, *Jekyll and Hyde* and other permutations of the mad scientist legend), and I will explore the potential usefulness of appropriating mad science as a model for criticism.

During the past few decades, challenges to established literary criticism have played out in terms reminiscent of popular mad scientist narratives. From feminists' focus on the personal and political in a supposedly objective discourse to various poststructuralist critiques of accepted natural/social orders, contemporary theory often fits the model of mad science. Additionally, the reactions to these challenges have often characterized theorists as posing the same kind of threat to society (and the institutions of knowledge) which the mad scientist poses.

After examining this history, I will explore how the concept of mad science might be appropriated as a useful model for critical practice. Can a "science" which uses the irrational, combines passion and intellect, and problematizes the distinction between subject and object be viewed as a positive, productive activity, rather than simply a misuse or aberration?

Keywords: mad science, critical theory/literary theory/literary criticism, science fiction, feminism, poststructuralism, subject/object,

Session 5B: I-Tech: Machineries of the Self (*Ardmore Room*)

Chair: Patricia Donaher, Missouri Western State College

Hopeful Monsters on the *Steel Beach*; Andrew McMurry, Indiana University

"In five years the penis will be obsolete." So begins John Varley's *Steel Beach*, a postgender, post-apocalypse, post-penile peak at life on the moon. Much of the rhetoric around the high-tech of the self has been celebratory. The positive valance of the cyborg or hybrid, as Donna Haraway and Bruno Latour have noted, is that it can stand for the mixed and miscreant origins of the postmodern subject, an anti-Aryan mongrel coyote trickster figure. The cyborg erodes the nature/culture boundary and perhaps heralds the way beyond the assorted dualistic impasses that have plagued modernity. The recuperation of, say, the "Frankenstein" image is an attempt to avoid naive appeals to natural purity, especially since the battle for the future looks as if it will be carried out on a rhetorical field where the concerns of technophobes and neo-Luddites will be increasingly irrelevant, if not tantamount, ironically, to a kind of anthropocentric chauvinism.

Nevertheless, in this paper I'm interested in exploring the down-side of the cyborg. I challenge the notion of human-machine blending as an augmentation; instead, I'd like to think of the transition to the cyborg as a response to unmitigated disaster. I do so by looking at hybridization in an ecological rather than a social context. There, the cyborg appears as a reaction to extreme environmental contingency, a jury-rigged way of keeping the human subject one step ahead of the disasters she creates in her wake. The cyborg is a "hopeful monster" thrown up on a steel beach which marks the death of whatever it is that once was "nature." Varlety's book is an excellent site to stage this argument, because the cyborgs here owe their origins as much to the destruction of Earth and the perils of a claustrophobic lunar existence as they do to the liberatory appeal of a body-warping "I-Tech." Viewed as an adaptation to severe environmental constraints, the evolution of the cyborg becomes a way of making a silk purse from a sow' s ear, a last gasp effort to save whatever it is that once was "human."

This Monstrous Jigsaw: Somatic Identity, Horror Film and Geneticism in the 1950s; Patrick Gender, College of Lake County

In this paper, I will explore the connection between popular scientific discourse and somatic identity in the 1950s, specifically in terms of the popularization of genetic theory and its effect on cultural attitudes toward the body. The promulgation of information concerning eugenics, geneticism and the discovery of DNA signals a paradigm shift in terms of how we envision our bodies, a sort of breakdown of bodily autonomy. In a Foucaultian sense, our genes become the site of intense surveillance, a genetic unconscious which we must confess in order for it to be analyzed and controlled. Using examples drawn from the omnipresent horror films of the 1950s as my prime source, I will discuss the influence of the popularized discourse of genetics on both somatic and social identity--the body and the body politic--with the ultimate goal of connecting this form of genetic paranoia to the fear of communist infiltration.

The Technology of Disability and the Promise of Resistance: Robert Murphy's *The Body Silent*; William Major, Indiana University

In the wake of a raft of recent work on illness and the body, it is now a commonplace argument that chronic illness and disability are every bit socio-cultural as well as physiological conditions. Often less clear, however, is by what economy the body-self is socially inscribed, and how and to what degree the self, in a drama of negotiation, can resist these inscriptions. In Robert Murphy's *The Body Silent* (1987), Murphy, a cultural anthropologist, "witnesses" the paralytic effects of his own aggressive tumor in an ethnographic encounter with himself and the larger social and cultural context. This paper will suggest that Murphy's project—the resistance to dominant technologies of

self through the production of self and text—is paradoxically also a means by which he re-integrates into dominant cultural "healthy paradigms," even as he recognizes those discourses and practices as producing a certain alienation. My critique engages what Michel Foucault and I call "technologies of alienation and production" at the level of cultural negotiation; in other words, this paper not only investigates the import of Murphy's specific textual production to his ongoing narrative of identity, but more importantly examines the condition of possibility of such production.

Keywords: disability, body, technologies of self

There is No Trace Beyond the Hard Drive--Analysis of Thomas Hettche's novel *Nox*;
Aminia Brueggemann, Brown University

Thomas Hettche, born in 1964 near Gießen, Germany, studied German Literature and Philosophy at the University in Frankfurt. Hettche's debut on the literary scene *Ludwig muß sterben* (1989) and his second book *Inkubation* (1985) were met with high praise from establishment literary critics. Since 1993, he has been living with his wife and child in Berlin.

This paper attempts to show that Hettche's novel *Nox* goes beyond the mere description of the famous night of the fall of the Berlin wall. In *Nox*, the act of representing 'voice' as the site of a constant struggle is articulated. This paper questions the power of language by focusing on the embedment of a concept of *Sprach-verlust* (loss of voice) and *Sprach-findung* (re-appropriation of voice) represented through the post-modern usage of the computer as dis-embodied language in the text.

In a language reminiscent of Patricia Highsmith novels--cool, clean, and deadly, the first pages of Hettche's text describe the murder or rather the sacrificial slaughtering of the first person protagonist. In spite of the 'death' of the protagonist, his voice, born out of death and pain, appears to continue the narration thus re-creating a seemingly untouchable and omnipotent voice. In this manner, the violent death provides the space for the opportunity to listen to another voice by means of using the virtual reality of cyber space. This subtle but profound act of appropriation of 'human' voice by technological discoursive practices denies independent speech.

The computer "voice" in *Nox* attempts to occupy and to speak from the position of the dead protagonist, because his position is regarded as unclaimed and therefore empty. Fredric Jameson's argument that the projection of an author's or a narrator's voice is as unmistakable as your own fingerprint, is in accordance with the traditional assumptions about voice as a marker of individuality and self-identity in postmodern discourse. But what happens to a person's sense of identity, if his body and his voice has been taken away and occupied by a computer? Hettche's story does not offer easy solution, but rather points to answers by speaking its desire for an unappropriated and unmediated voice. As theory of cultural suppression suggest it is in appropriation itself that one can find the site of resistance to political or personal hegemony.

Thoughts which are machines have no time. And their ability not to forget changes things. Nothing cannot be seen. Nothing can get extinct. Memory comes into to existence in a new fashion. There is not trace beyond the hard drive (1).

1. Thomas Hettche. *Nox*. (Frankfurt: Suhrkamp, 1995).

Session 5C: Teaching Literature, Teaching Science [Roundtable Discussion](*Brookwood Room*)

Organizer/participant: Anne Bratach, University of Missouri - Rolla

Participants:

Stephanie Browner, Berea College
David Cassuto, University of Missouri - Rolla
Richard Nash, Indiana University

What does it mean to teach literature to engineers? What does it mean to teach science as culture to English majors? Our roundtable seeks to explore the diversity of our classroom experiences, and to use this diversity to develop effective interdisciplinary pedagogical strategies. As participants in the literature-and-science discourse, we see ourselves as challenging traditional disciplinary boundaries; and we recognize the resistance some of our students have to our classroom experimentation. But it's precisely our students'--and sometimes our colleagues'--resistance that yields the richest insights into the issues that concern us--issues including knowledge in the arts versus knowledge in the sciences, canon and discipline formation, and institutional mission. By seeing our own work in the context of the general culture, we can model for our students approaches to different ways of knowing that enrich specialized education.

Session 5D: Pain, Beauty, Happiness: Intervening In and By Biomedical Discourses (*Morningside Room*)

Chair: Anne Balsamo, Georgia Institute of Technology

This panel will interrogate the proliferation of biomedical discourse as a development of late capitalism. Biomedical definitions of "health" have been extended to more peripheral realms as part of the capitalist need to create new markets. As a result, consumer participation in the pathologization of previously "normal" variations of health is crucial to the capitalist project of biomedicine. Thomas Darwin addresses biomedical strategies of intervention in the body's interior through the increasingly pervasive technologies of over-the-counter pain relievers. Laura Sullivan examines the biomedical intervention upon the body's exterior through rhetorics of medicine and control in the advertisement of female beauty (skin care) products. Jane Love studies the medicalization of the mind and emotions through the contested figure of Prozac and its significance for popular and academic perceptions and experiences of depression.

Powerful and Long-Lasting: The Rhetorical Technology of Killing Pain; Thomas Darwin, Memphis State University

Among medicine's most pervasive and least problematized technologies are non-narcotic analgesics, known in their over-the-counter forms by brand names such as Tylenol, Advil, Motrin, and Orudis. This paper investigates the ways these drugs (in both prescription and non-prescription form) constitute relationships between doctors and patients and between consumers and the medical establishment. It analyzes how these drugs are rhetorically constructed for and by doctors and for consumers in four sources: Technical explanations about how they work in the body, such as is found in physiological and pharmacological manuals and textbooks; advertising from pharmaceutical companies intended for physicians and found in medical journals (e.g., *New England Journal of Medicine*, *Journal of the American Medical Association*); advertising intended for the general public in popular periodicals (e.g., *Newsweek*, *Time*, *TV Guide*, etc.) and television; technical advice for the "lay person" such as is published in articles in health magazines and consumer magazines (e.g., *Health, Consumer Reports*)

By analyzing explanations of how the drug works and what it does for the sufferer, the study traces how each source constitutes the doctor's agency, the patient's agency, and thus the relationship between the two. Specifically, this study shows that rhetoric for and by doctors features a drug's ability to control the body of a patient who is pliable and completely open for intervention. Rhetoric for patients and consumers features a tension between two poles: the drug as a savior providing relief and a return to normalcy, thereby making the patient not only more receptive to the drug, but by extension more receptive to medical intervention; the drug (in over-the-counter form) as a symbol of patient resistance to medical intervention because patients can make their own choices about how and when to use the drug. Rhetoric for both doctors and patients ultimately promises the ability to micro-manage and control pain and chaos in the body in the interest of maintaining productivity in a society geared for constant production. Because it is about a technology designed to manage pain, the study also draws out the implications of these rhetorics for how we conceptualize and treat pain in our culture

"Developed by Dermatologists": Biomedicine Meets Beauty in Contemporary Skin Care Discourse; Laura L. Sullivan, University of Florida

Contemporary cosmetics discourse has come to be dominated by texts concerning skin care, which has become a multi-billion dollar industry. In these texts--which include print advertisements, articles in "women's" magazines, and television advertisements--the discourse of biomedicine and the discourse of beauty intersect in new and often disturbing ways. The "cult of expertise" in

biomedicine is invoked, as the discourse of skin care promotes the figure of the (white, male, European) doctor as the ultimate authority figure who tests, endorses, and creates skin care products. Cosmetics companies sponsor their own research on skin care products and ingredients, such as the darling ingredient and latest skin care craze, Alpha Hydroxy Acids (AHAs). Cosmetics companies also affiliate with their own doctors, who are increasingly the spokesmen for the skin care lines offered in cable television infomercials; some recent examples include the infomercials for Murad, Mon Ami, and Victoria Principal. Significantly, there is a paucity of research along these lines published in medical journals, a trend which points to the very artificiality of the credibility and authority being invoked by skin care advertisements' increasing reliance on a scienfiticity which emphasizes the role of doctors, research, statistics, and tests in the purported effectivity of products.

In addition to examining the industrial intersection of biomedicine and beauty in skin care, I also consider the ways that cultural values get mapped onto/into women's bodies. Metaphors which currently predominate in biomedicine, such as metaphors of war, control, surveillance, and capitalist productivism, are now prevalent in skin care discourse as well. Beauty has now become an all-out war, with a woman's skin as the primary battlefield. We now need "Advanced Wrinkle Defense Cream" (L'Oreal) and skin care products which have sophisticated "delivery systems" and which contain "microcarriers." In a wicked and insidious manifestation of the Foucaultian panopticon, skin care discourse provides women with the knowledge that we are being watched (more accurately, scrutinized) and keeps us adhering to certain rules. The "science is watching' theme of biomedical discourse is repeated. Just as we are encouraged to incessantly monitor our bodies for signs of "abnormality" in terms of health, we are encouraged to incessantly monitor our appearances, especially our skin, for "flaws," which are to be read as signs of "abnormality" and "damage." In contrast to the beauty discourse of a few decades ago which recommended that women get our "beauty rest," contemporary skin care discourse instructs us to conceal all signs of tiredness (especially our "puffy eyes"). Such logic is tied to productivist ideology and goals. If popular biomedical discourse tells us to take medicines so that we always can keep working, beauty discourse tells women, who are working harder than ever in this post-women's-liberation-movement era, that we cannot stop being productive, and we also cannot stop "looking good." To not measure up on either level will be to admit "failure" to live up to our liberation-inspired goals and dreams.

Prozac Alien-Nation: Figure of an Anti-Depressant; Jane Love, University of Florida

In her memoir *Prozac Nation*, Elizabeth Wurtzel writes of her suspicion that "anything that works so effectively, that's so transformative, has got to be hurting me at another end, maybe sometime further down the road." And even if it is not hurting her, still, she states, "I can't believe that anyone in his right mind would deny that these are just too damn many pills."

Wurtzel expresses the reactive counterpart to what has been portrayed as a cultural craze for Prozac. On a different front, Peter Kramer. in *Listening to Prozac* examines a similar skepticism In medical ethics through the question of risk versus benefit--a relation that Prozac, with its relative lack of side effects, clearly disrupts. Both Wurtzel and Kramer express the frustration and fear that accompanies a shift in the ethical landscape--suddenly, the axes of right and wrong, good and bad, benefit and risk, "real" self and chemically altered self are in disarray. Significantly, few of the contestants dispute the benefits that Prozac provides for those who suffer from depression. Instead, the object of dispute is the drug itself and whether it should do what it in fact does.

Among the academic critiques ranged against Prozac are that it is prescribed overwhelmingly for women (thus abetting the systematic control and oppression of women), that it facilitates both corporate and government control of the populace, and that it simplistically obscures the psychological! political, social, and economic causes of depression. None of these difficulties would be as easily attributable to Prozac if its use entailed obvious risk or severe side

effects, either of which would provide a nonideological control of its use. It is precisely the absence of side effects or risk that render Prozac problematic for academic discourse: its near-perfect invisibility allows it to be seen as the perfect instrument of control.

In this paper, I will problematize the academic and the popular problematizations of Prozac to suggest that both participate in a specific figuration of depression. The antipathy for antidepressants finds many different articulations and motivations, but all of these share discomfort with a drug whose realm of transparent intervention is not the body (where such drugs are welcomed), but the mind. Since Prozac's most common realm of intervention is depression, the discomfort attaches in particular to the status conferred upon depression as an illness that is responsive, not just to drugs, but to transparent, beneficent drugs--drugs that do not exact a pound flesh in exchange for their favors.

Depression--in both the popular and the academic imaginations--is highly cathected in ways that are threatened by beneficent psychopharmacological intervention. The figure and discourse of depression are indices for suffering, both personal and social, and as such they validate experiences that might otherwise be ignored. The romanticization of depression, while largely an adolescent tendency, is nevertheless a crucial and necessary impulse in a culture that has no other form of affirmation for the experience of gratuitous psychic pain. An inevitable consequence is that, more often than not, the pain of depression is scripted into causal narratives that submit to academic or moral critique; the pain is thus no longer understood to be gratuitous; indeed, it "cannot" be accepted as gratuitous because the source of pain in depression is its utter lack of meaning. Narratives of cause, whether characterological, contextual, or biological, compulsively address this painful lack of meaning, but invariably founder upon the resistance of depression to meaning. The hardest thing to swallow about depression is that it has no reason; having no reason, it both attracts and resists cathexes and their narratives.

Prozac, as a fetish of academic and popular discourses, is a figure for this incalculable, excessive, and resistant nature of depression. I suggest, however, that as such a figure, Prozac also offers possibilities for affirming the experience of depression--possibilities that avoid lapsing into models of either biological or contextual causality. The 'trouble" with prozac is its beneficence, which escapes the rational systems of oppositionality or causality that tend to determine ethical value. The "trouble" with Prozac, and the reason for its alienation within certain popular and academic discourses, is that it affirms, it negates, it is excessive; in short, it is *like depression*. Physiologically, Prozac works by inhibiting serotonin reuptake, but in a literary sense, Prozac works upon depression because it figures depression. Alongside the discourses that criticize it, Prozac also requires a literary discourse that unfolds this figuration. Such a discourse would be also be an affirmation of depression, and, perhaps, the beginning of a therapy based on experience rather than causality.

Policy and Pores: The Skin - Surface for Disease or Barrier between Enlightenment Professions; Philip K. Wilson, Truman State University

Parallel with or consequent to the rise of consumerisation in early eighteenth-century England, beauty became increasingly seen as a commodity. The "female world," in particular, so the *Spectator* reported, was "very busy among themselves in bartering for features" of beauty. Domestic self-help manuals proffered "secret" and "well approved" preservatives for the skin alongside their preservatives for fruits and vegetables. With an increasing social consciousness of beauty, a fear of particular skin disease and disfigurements, and an expanding middle class wealth, the demand for protection of the skin and corrections of visible markings grew as well.

No English author had, prior to Daniel Turner's 1714 *De Morbis Cutaneis* compiled a work solely dedicated to diseases "incident" to the skin. Turner, a surgeon turned physician, divided this work into two parts. In Part I, he described diseases such as leprosy, herpes, the itch, and smallpox which, according to his own account, arose inward[ly] but presented themselves externally." In

Part II, Turner described diseases or "accidents" of "Outward" origin including the "Lousy Evil," syphilis, burns and venomous insect bites.

Despite what might appear to be rather rigid classifications, Turner argued that the skin was not quite the barrier it seemed to be. Surgeons, who for centuries had been relegated by physicians to treating externally manifest diseases, argued that the external remedies they had been administering were producing internal effects similar to the medicines which physicians had been using to treat internal diseases. Turner pointed out that the pores of the skin - recently identified with the new microscope - allowed externally applied medicines to be transmitted inward. Using *De Morbis Cutaneis*, Turner urged the College of Physicians formally to extend the right for surgeons to administer internal medicines by acknowledging that the medicines surgeons already used were producing internal effects.

Treating skin disease did not, like bone setting, bladder stone cutting, and cataract couching, develop as a specialty during early eighteenth-century England. Nevertheless, the therapeutic capacity of the skin which Turner demonstrated remained central to occupational turf wars between physicians and surgeons throughout the Enlightenment.

Keywords: Skin, surgeons, physicians, Daniel Turner, beauty, Enlightenment

Session 5E: Good Vibrations: The Aether in Science, Literature, and Art (*Georgia Room*)

Chair: Bruce Clarke, Texas Tech University
Organizers: Bruce Clarke, Texas Tech University and Linda Dalrymple, University of Texas - Austin

Before the twentieth century, the instantaneous movements of physical forces such as gravitation, electromagnetism, heat, and light were often explained as the propagation of wave motions within a hypothetical aether, a fantastically subtle substance running through the void of space and providing a means of mechanical connection among the various material bodies distributed in the cosmos. Parallel to the scientific career of the aether was its cultural migration from an authorized explanatory concept within late classical mechanics to a key component in a series of scientistic cosmologies spun off from Victorian physics. Much of the imaginative ambiance of modern space descends to us from this prior, aethereal form. Even as the scientific status of the aether was being removed, as a transformative and connective medium rippling with undetermined energies it continued to inflect the ideological forms of modern space-concepts. As the reality of the aether was being evacuated by field theory and relativity, its earlier imprint remained culturally embedded in literature, art, and other forms of speculative production. The four papers in this panel will provide an overview of the career of the aether in its scientific and cultural uses.

Plenty of Nothing: The Rise, Fall, and Rebirth of the Aether; Sidney Perkowitz, Emory University

For a substance that has only recently attained scientific respectability of a sort, the aether has a distinguished lineage. In Homer's time, "aether" denoted the higher reaches of the atmosphere, or celestial light. Later Aristotle added it to the four elements earth, air, fire and water, as the fifth element or "quintessence" that comprised the cosmos beyond the moon. Scientific meaning seemed to accrue in the seventeenth through the nineteenth centuries when the aether was taken as the medium that supports light waves, as water is the medium that supports ocean waves. Yet by 1905 this elaborate conceptual structure, built on a substance that had never been actually detected, was in ruins, destroyed by the Michelson-Morley experiment and Einstein's theory of relativity. The aether returned in another guise in the 1930s, however, when the astronomer Fritz Zwicky saw evidence of a new form of celestial material. That "dark matter," now under intense scientific study, may be unlike anything on earth.

I will explain why the unlikely and contradictory material of the aether seemed essential in the nineteenth century, why it fell out of favor in the early twentieth, and how dark matter now represents a new form of aether similar to Aristotle's conception.

Aether, Energy, and Space In Victorian Literature and Science: Tyndall and Hinton; Bruce Clarke, Texas Tech University

When thermodynamic ideas were initially extrapolated from mundane to universal scenarios, the luminiferous aether provided the vehicle that carried the dynamics of energies on throughout all space. The discourse of the aether was thus bound up with the cultural poesis of thermodynamics. Parallel to the scientific career of the aether was its cultural migration from an authorized explanatory concept within late-classical mechanics to a key component in a series of scientistic cosmologies spun off from Victorian physics. Aether provided a bridge over which one might proceed to metaphysical matters while ostensibly maintaining a materialistic grounding.

In the milieu of Victorian science, the all-accommodating aether lent itself to a spectrum of cultural demands. Victorian science promoted the luminiferous aether because it promised theoretical unification as well as the maintenance of physical continuities. It was immediately

instrumental in the discourse of the energy-concept and the development of thermodynamics. For the speculative physicist John Tyndall, the aether represented a triumph of the scientific imagination. It gave moral encouragement to secular scientists in their battles with religious institutions, because it demonstrated that the agnostic mind could operate through science to establish cosmic universality and intellectual beauty. At the same time, in the writings of Charles Howard Hinton the aether bound together scientized versions of a Platonic cosmos. The aether came to the assistance of Hinton's philosophy of the fourth dimension as a medium by which to resolve the intellectual tensions between scientism and idealism.

The Aether as Battleground: Mandeleau's "An Attempt at a Chemical Conception of the Aether"; Stephen J. Weininger, Worcester Polytechnic Institute

Abstract not available

Materializing the Ether: The Italian Futurist Art of Umberto Boccioni; Linda Dalrymple Henderson, University of Texas at Austin

In a 1911 lecture the artist Umberto Boccioni declared, "What needs to be painted is not the visible but what has heretofore been held to be invisible, that is, what the clairvoyant painter sees." In redefining the artist as a visionary seer who could reveal the invisible, Boccioni was responding to the radically changed paradigm of matter and space produced by a succession of scientific discoveries in the later 1880s and 1890s. These events included Hertz's confirmation of the existence of electromagnetic waves in 1888, Roentgen's discovery of the X-ray in 1895, Thompson's experimental verification of the electron in 1897, and the Curies' discovery of radioactive elements in 1898.

The model of electromagnetic waves vibrating in the ether played a vital role in Boccioni's developing art and theory. X-rays, in particular, offered a new model of penetrating, clairvoyant vision and transparent, dematerializing matter. At the same time, Boccioni was fascinated by the ether itself and spoke repeatedly of his goal of materializing the ether or "atmosphere" around objects. Indeed, following nineteenth-century ether theorists as well as contemporary occultists interested in spirit manifestations, Boccioni argued that "solid bodies are only atmosphere condensed." This paper will focus on two of Boccioni's works, his painting *Matter* (1912) and his sculpture *Unique Forms of Continuity in Space* (1913), investigating the artist's response to the medium Newton had described as "exceedingly more rare and subtile than the Air, and exceedingly more elastic and active."

Session 5F: Scientist's Lives and Writings, Part II (*Piedmont Room*)

Chair: Pamela Gossin, University of Texas - Dallas

Alexis Carrel's *Man, the Unknown*; L. G. Walker, Jr., Carolinas Medical Center

Alexis Carrel, winner of the Nobel Prize for Physiology or Medicine in 1912 and pioneer of vascular surgery and transplantation, wrote a book in 1935, *Man, the Unknown*. A best seller, it went through at least 55 printings and was translated into 18 languages. Carrel, a native of Lyon, France and an investigator at Rockefeller Institute in New York, was featured on the cover of *Time* magazine at the time of his book's publication.

The purpose of this paper is to re-assess Carrel's book after 60 years, examine Carrel's reason for writing it, and examine the ideas that he promoted, which included excessive physician specialization, a belief in telepathy and clairvoyance, the effect of hormones on creativity, the inter-relationships of time and space, crime and genetics, and the punishment of criminals.

Carrel proposed an Institute for the Study of Man made up of a high council of cloistered scholars, which he believed would be a remedy to the collapse of civilization as he saw it.

Statements by Carrel in *Man, the Unknown* have led to what has been called "an embarrassing public debate" in France, causing some public roads and bridges, earlier named for Carrel, to be re-named during the 1990's.

In Flight With the Philosophical Infant; Frank Durham, Tulane University

In an earlier presentation at SLS I tried to deal with the record on Isaac Newton's sexuality ["'Something Rather Languid in His Look and Manner'," SLS Boston 1993]. That effort was not well received by some historians present, although other listeners were pleased and a few people took copies of the long paper I had prepared.

One of my conclusions at that time was that interesting stories would be found by looking at others of Newton's and Fatio's mutual circle in London, which is to say by abandoning the biographers' practice of ignoring everything that happened outside Newton's immediate field of view.

My attempt (1993) also produced the conjecture that the confluence of mathematical-religious natural philosophy, English class structure, and sexual repression was implicated in the high incidence of depression or melancholia among these men. And, most tentatively, I guessed that there was something about the mixture that made even the geometry unlike that of the (self-styled) homosexual Greek natural philosophers. This overall line of argument one historian dismissed with, "Oh, really. Melancholia."

In spite of the problem of authority that such a project evidently presents, I did not abandon the subject. Since then I have learned more about the seventeenth century, in my happily presentist, interdisciplinary way. I have read a good bit more about sexuality, especially for that century; and more about religious contention, as well as Newton's own mathematics and his alchemy. And, because in such a context it cannot be avoided, I have begun to look at the history of medicine. Some of this reinforces some of my earlier thoughts; some of it has changed things for me. A little of it has found its way into subsequent presentations at SLS, and into a new course I have begunto teach at Tulane.

So I have a new take on some of these elements. It involves in a way it zooms in on the Philosophical Infant, a figure from alchemical lore whose ambiguity is just what I need.

Opium and narrative acts: A history of authors in De Ouincey's autobiography; Peter Melville Logan, University of Alabama

In Britain of 1821, opium was a staple of the medical pharmacopoeia. In various forms, it was sold in chemists shops, Grocers, drapers and even in bookstores when De Quincey's

Confessions of an English Opium-Eater first went on the news stand as a feature article in the *London Magazine*. While habituation to opium was a familiar feature of Regency society, escape from that condition was thought to be impossible. And so De Quincey's claim that he had succeeded, where none had before, in "breaking the chains" attracted a great deal of interest.

De Quincey's narrative is premised on that central claim of escape, and it is escape that makes possible his self-narration. He uses a model of opium habituation derived from a colonial context, in which the user is taken over by the opium and the addict s will becomes subject to the materiality of the body. Thus his claim to escape is necessary to establish his status as an independent agent, one able to narrate his own story. Otherwise, his narrative is a product of his materiality, as if his addiction were controlling his speech.

Over the next thirty-five years, De Quincey supplemented his initial text with a variety of appendices and, in 1856, with a radical revision. In each instance, he altered his claims about the relationship between his narrative voice and his addiction, and ultimately, he adopted a completely different model of addiction. His revisions form a history of distinct subject positions, as he shifted the relationship between his writing and his material condition. The Confessions have a succession of narrators, rather than a single one.

In the 1823 Appendix (written as a substitute for Part III), De Quincey subverts the original narrator's relationship to addiction, claiming he had not, in fact, escaped, but was laboring under a delusion that he had. Thus his prior claim to agency is redefined as an illusion of agency produced by his addiction. Given his construction of addiction, which remains unchanged, this redefines his narrative as a product of his material enslavement, and not an act of independent will. And with the earlier narrator's claims to agency gone, the narrative becomes a case study in the addict's self-delusion. The prior narrator is thus an object, rather than a subject. The Appendix also reasserts De Quincey's ultimate escape, and so the independent subject finally emerges in the text, appearing as a necessary supplement to the narration, from which it is absent.

In 1838, De Quincey discusses the writing of the *Confessions* in his "Essay on Charles Lamb," and he again revises the prior narrator's relationship to addiction. Far from being independent, he was in such poor shape that he had to treble dosages at the time of writing in order to produce the narrative. The subject in the *Confessions* is redefined in unambivalent terms as an addict and, thus, as one who is unable to occupy the position of subject.

The Lamb revelation defines the narrative, then, as a product of the speaker's material condition, rather than a willed act, and De Quincey comments on it, indirectly, in the report of a minor incident -- a set piece -- which immediately follows it in the Lamb essay. In it, he describes a kind of corporeal speech and articulates the possibility of a subject position defined by absence, rather than presence. At the time of writing the *Confessions*, he tells us, he was personally unhappy, but he was "much too firm-minded and to reasonable" to complain. He also suffered from a disease of the liver that made him sigh continuously, in a purely mechanical action "without any cooperation from the will." People are apt to "misapprehend" such sighs as representing "a sentimental turn of feeling," and indeed he was suffering from despair, but his sighs were not sentimental. On the contrary, he asserts, "I endured in silence."

This episode illustrates two distinct forms of speech. First is a willed speech, indicated here by his "silence." Second is a corporeal speech produced by the materiality of the body. These mechanical sighs (*suspiria de machina*) are thus an analogy for the *Confessions*, following his subversion of the subject-position within it. But he also proposes a delicate epistemology in which corporeal speech remains in an opposite relationship to willed speech, while nonetheless fulfilling a representative function.

In 1856, the subject-position in the *Confessions* is radically modified through a redefinition of addiction. He now views the colonial model as itself a childish fear, and uses instead the eighteenth-century British domestic model, in which addiction is lifelong but

relatively benign, rather than an all-consuming absorption of the subject's independence. Where, in the 1822 version, the narrator was deluded about his supposed independence from the material, in 1858 his prime delusion is the initial notion that addition could enslave the will. He was always free; he just did not know it.

Saturday, October 12, 8:00 - 9:30 am: Session 6

Session 6A: Paths of (Mis)Understanding: Physics, Mathematics, and the Study of Literature [Roundtable Discussion] (*Ansley Room*)

Chair: Thomas Jackson Rice, University of South Carolina

Roundtable organizers and participants:

Thomas Jackson Rice, University of South Carolina
Fereydoon Family, Emory University
Peter Mackey, University of South Carolina
David Finkelstein, Georgia Institute of Technology

A discussion, among two professors of literature and two physicists, of the real and/or purported problem of the misappropriation of scientific models in the humanities. We plan to consider, but not limit ourselves to, the positions taken by Paul Gross and Norman Levitt in their *Higher Superstition*, and the issues raised by the recent *Social Text* controversy ("Sokal's Hoax").

Session 6B: Complexity and Chaos (*Ardmore Room*)

Chair: N. Katherine Halyles, University of California - Los Angeles

Text Authorship Determination Using the Chaos Game Algorithm; Ramon A. Mata-Toledo and Matthew A. Willis, James Madison University

A graphical technique using Iterated Function Systems is examined for use as a tool for determining text authorship. The technique has been used to examine electronically stored text by visually looking for patterns in the data generated. This simple graphical technique, which may be implemented and used on a PC, may serve as a useful complement to more conventional statistically-oriented methods for determining the authorship of textual documents. The works of several well-known authors were examined using this technique.

Encyclopedic Narrative and Complexity Theory; Trey Strecker, Ball State University

In 1976, in the wake of *Gravity's Rainbow*, Edward Mendelson identified "a genre that is of central importance in western literature," encyclopedic narrative. Almost thirty years later, the novelist Alexander Theroux was lamenting the decline of this genre, "where a book written to be read, is *made* as a book [to] be cherished for its lists, collocations, digressions, self-contained stories, and be taken for what more often than not it is, a liberal education." However, a survey of contemporary American literature reveals an abundance of encyclopedic fiction by Thomas Pynchon, John Barth, Robert Coover Don DeLillo, William Gaddis, William H. Gass, Ursula K. Le Guin, Joseph McElroy, Evan Dara, Richard Powers, Bob Shacochis, William T. Vollmann, and David Foster Wallace, among others. My essay utilizes this explosion of encyclopedic narratives to reevaluate Mendelson's conception of the genre. I propose a way of understanding encyclopedic narratives grounded in the sciences of complex adaptive systems and ask how complexity concepts of self-organization, cooperation, coevolution, and fitness might replace models of narrative economy with new models of narrative ecology.

The encyclopedia, like narrative, is a system for ordering information. An encyclopedia attempts to encompass the total knowledge of a moment, always already outdated, in a spatial order. Postmodern encyclopedic narratives challenge the notion of the encyclopedia as a closed system. These ambitious narratives are not "grand failures" that inevitably collapse into chaos, but carefully structured attempts to situate global and local knowledges in a "thick" interdisciplinary field. The new encyclopedists do not shy from the abundance of information in postmodern culture. Instead, they undertake the difficult work of trying to understand it and address it in their fiction. This task draws their texts to the critical edge of order and chaos where complexity emerges (Bak and Chen). Narrative, I argue, negotiates the interstitial nodes of encyclopedic space. Within the interdisciplinary matrix of the encyclopedia, complexity emerges through narrative *passages* across boundaries.

This paper concludes with a brief exploration of postmodern texts by Pynchon, Le Guin, Powers, and Vollmann, where I explore the genre of encyclopedic narrative as an "ecology of knowledge."

Keywords: encyclopedic narrative, complexity, ecology

Bamberging the Berg: Speaking of Chaos in Witold Gombrowicz's *Cosmos*; Glen Scott Allen, Towson State University

Many of Gombrowicz's longer works can be read as a "working out" of the grammar which structures our associative, phenomenological interaction with a Witold of fundamentally distinct "things." In *Cosmos* particularly, we find a richly layered narrative structure which can be read as a sophisticated meditation on the semiotic theories of Saussure and Derrida, as well as the modern

scientific model known until recently as Chaos Theory, and now represented in several incarnations, such as Complex Systems, Nonlinear Dynamics, and various other names. However, Gombrowicz's macabre and at times hilarious novel seems not only to have anticipated the application of chaos theory to narrative, but to have suggested some of the fundamental problems and contradictions of chaos theory itself.

Saussure suggested two basic relational categories in language: broadly associative (what has become known as paradigmatic), and narrowly juxtapositional (syntagmatic). In the early sections of *Cosmos*, for instance, the narrator is constantly attempting to reason from purely syntagmatic relationships (patterns of spots on a ceiling, the suggestive alignment of peoples' mouths, a dead cat and the tree from which it hangs), or basic catalogues of discrete things ("There were also a beetle and an ant, and another ant, an unknown worm..."), to paradigmatic ones which might establish a larger "grammar" for his situation; a grammar which would grant deeper signifying meaning to what otherwise threaten to be isolated, meaningless signs. He seeks to build a cosmos of larger conceptual associations out of a chaos of simple spatial juxtapositions.

The term the narrator arrives at to describe these tentative associations built purely upon syntagmatic relationships is "constellations." And yet he senses that this scheme achieves only a superficial grammar: "I was quickly exhausted by the profusion of things...I started working out shapes and relationships (as in between the mouths), until I realized that what captivated me was one thing's being behind another...just as Katasia's mouth had been behind Lena's..."

We understand here that the narrator is questioning the logic of metonymy, ("In reality there was no link whatever between those two mouths, I had merely seen one in relation to the other, it had been an accident of distance, angle, and position..."), and that he is seeking some more essential and less haphazard organizing principle. It is here that he first makes explicit reference to the logic of *différance*, which is a key component in the semiotics of Derrida: "...for excessive concentration leads to distraction, looking at one thing masks everything else..."

By the end of the novel and the apocalyptic flood which washes away all distinctions, the narrator seems to have decided that there can be no such thing as "language"; or that communication is, at best, fragile and illusory. In other words, he seems to have become an avid deconstructionist. Yet such a conclusion not only marks this final perceptual syntax as firmly post-structuralist, it also suggests a posthistorical world where the apocalypse *itself* can simply be forgotten, washed away in a flood of words. It would seem that in the end chaos has triumphed over cosmos, and all models for the ability of language to express relational connections between discrete parts of the world have failed.

Yet a closer look at *Cosmos* suggests an alternative interpretation. The narrative structure of the book is organized in what might be called "fractal" structures, i.e., small-scale units of thematic symmetry which are then repeated in ever larger and larger groups, or "constellations." Chaos theory suggests that what appear to us as chaotic systems are in fact comprehensible on small scales, and that the local geometric (syntagmatic) relationships of these small scales remain essentially unchanged regardless the increase in scale.

Using certain basic concepts from fractal geometry and chaos theory (especially as presented in the work of Philip Stehle, *Order, Chaos, Order: Tile Transition from Classical to Quantum Physics* (1994); and N. Katherine Hayles, *Chaos Bound: Orderly Disorder in Contemporary Literature*, (1990)), I will argue that *Cosmos* is an entirely appropriate name for this novel, as the narrative structure--which appears to give way to chaos and disorder--is in fact built of small-scale units which multiply and replicate themselves on larger scales, eventually building a true cosmos out of its apparent chaos. Additionally, I will use the novel to suggest certain fundamental problems with chaos theory and our various representations of its dynamics. The paper will also draw from recent criticism about Gombrowicz (particularly *Gombrowicz*, Constantin Jelenski and Dominique Roux, eds.), and Gombrowicz's own *Diario argentino* (Editorial Sudamericana, c1968), wherein he makes certain very suggestive connections between the geometric structures of landscape and the narrative structures of language.

Labyrinths of Enlightenment: Figures of Complexity from Versailles to the *Encyclopédie*; Julie Candler Hayes, University of Richmond

Traditional intellectual history views Enlightenment rationality as the unfolding of the "geometric spirit" geared toward classification, systematization, clarity, and progress. In the twentieth century, this process has been viewed as emancipatory by some, coercive by others. I would argue, however, that this view of Enlightenment, which can be found in thinkers as different as Cassirer and Foucault, is narrow and restrictive. Over the past several years, I have been engaged in an examination of a number of Enlightenment texts in which critical awareness of the penchant for objectifying and systematizing produces a counter-discourse that enfranchises energy and complexity and brings a salutary skepticism to our ability to know and control.

In this paper, I will be looking at recurring figures of the "labyrinth" as they arise in Leibnizian physics and mathematics, in the debates over Linnean taxonomy in natural science, in the philosophical project represented by Diderot and d'Alembert's Encyclopédie--and even in landscape architecture, in the vicissitudes of the garden maze at Versailles. In a reading inspired largely by the work of Gilles Deleuze and Félix Guattari, but also by that of Michel Serres, I will show how a kind of "labyrinthine consciousness" or awareness of natural processes and mental operations as complexly structured, mobile events, informs Enlightenment thought.

keywords: Enlightenment, French Classicism, complexity

Entropy of the Letters; Sandra Brandao

Abstract not available

Session 6C: A Reconsideration of Foundational Concepts (*Brookwood Room*)

Chair: Koen DePryck, Institute of Knowledge Management

The Abuse of Theory; Barton R. Friedman, Cleveland State University

By "the abuse of theory," I mean both the abuse that certain (mainly poststructural) theoretical agendas have visited on literary study and the abuse such agendas have wrought on the concept "theory" itself, in effect reconceiving theory as a platform for ideological advocacy. Theory has, that is, become an enterprise in literary and cultural criticism quite different from what it has traditionally been in science.

Einstein, when he was just emerging as an implacable opponent of quantum ideas, wrote one H. Zangger, "In recent days I formulated a theory on this subject." Then, as it were in the breath between sentences, he retracts his claim: "Theory is too presumptuous a word--it is only a groping without correct foundation." For Einstein, a fully coherent, mathematically consistent construct alone deserves to be called a theory.

In literary and cultural criticism also, "theory" is treated as an honorific. Despite this connotation--or because of it?--the term may be conferred on virtually any framework for reading texts, to which its architects would attach special status. Though Einstein sometimes shrugged off the potential of observational tests to refute general relativity, structurally, logically, it meets Karl Popper's standard of theoretical legitimacy, containing in itself the potential to be falsified by data incommensurate with its predictions. The theory stands because it has passed all such tests to date.

Can the same claim be made for Derrida's theory of the trace, which implies an infinite regress? or for David Bleich's subjective criticism, which proposes as its essential question not what may the text be but what do we want to know from it, and which thus lapses into tautology? or for new historicism, which (as Murray Krieger points out) is caught between the general poststructualist denial of linguisitic referentiality and the largely Marxist position that all texts are shaped by, and must be intepreted according to, the values of the time and place that produced them? I do not think so.

Even Northrop Frye's theory of genres, among literary theories the closest to something a scientist might recognize as a theoretical construct, seems to me more a model than a real theory. And its reception exemplifies Richard Porty's remark that the "unscientific" nature of the critical enterprise dooms any effort to create a consistent vocabulary for it. Frye's proposals for generic restructuring and relabeling, in *Anatomy of Criticism*, have been almost universally admired, and very rarely applied.

The evidence suggests, then, that the project of theory in literary and cultural study must be substantially rethought or (as Rorty and Stanley Fish would surely argue) simply abandoned.

Key words: Bleich, David; Derrida, Jacques; Einstein, Albert; Fish, Stanley; Frye, Northrop, Krieger, Murray; New historicism; Popper, Karl; Porty, Richard; Subjective criticism

Speed of Light--Renewing the Scientific Imagination; Luis O. Arata, Quinnipiac College

The second postulate of special relativity has gained the status of law although experiments on the constancy of the speed of light remain inconclusive. Other viable theories received little attention. In this presentation I summarize the state of the speed of light postulate and use it as an example to outline the implications of such a paradoxical situation in science. The case of the speed of light shows the limitations of theoretical science to establish unequivocally a basic law of nature. Yet this inability is also a potential since it leaves an opening that helps fuel the renewal of the scientific imagination. Instead of a linear history of theories built and overthrown, it is more

productive to pursue parallel viable models based on different sets of assumptions, and then explore their consequences. This view of creative flexibility places science closer to art, and reintroduces the subjective perspective of the human observer into the theoretical picture.

In What Sense Is Language a Technology? Terrance King, Wayne State University

Language, the commonplace goes, is a tool because it expresses our thinking. But the notion of language as an instrument of thought has been questioned by different traditions, some of them originating in the Enlightenment, the very period when this idea enjoyed its most important prevalence. In Germany (Johann Herder and Wilhelm von Humboldt), in America (Charles Peirce), and in the 20th-century Saussurian tradition (which culminates in French poststructuralism), the view, in a very general sense, is that the expressivist commonplace of language-as-tool is misleading, since thinking is already language, or at least language-like: what we conceive as an instrument external to the mind is already identifiable with the internal agency of the mind itself. Today, this (what may loosely be called) semiotic objection to the notion of language-as-tool has gained wide acceptance, and I have no intention of attacking it. On the contrary, I want to use its semiotic axioms to suggest that language plays a decisive role as part of human technology, albeit not in the sense of the expressivist commonplace.

Few would argue that, as a species, the human race survives, indeed prevails, by means of its ability to make its environment adapt to its own needs instead of vice-versa. And yet individuals do not, *as* individuals, apply this transformative Power to the world in a direct fashion; they rather constitute, in their individual activities, that social sphere of mediation we call human culture, which is the actual transformative agency. If we treat the individual--once again, *as such*--we can imagine any number of practical situations where the difference between language and tool is clear and inarguable; but this same distinction is not as easy to draw in the collective sense of humanity conceived as a race, not of individuals, but of cultures. For in this latter case language and technology are both mediational products of the same con(de)structive faculty of transformation, one that enables each human culture to adapt to the world by continually refashioning it into that culture's own changing terms. Signification and tool-labor are here not different activities but only aspects of the same world-altering process.

This semiotic conflation of language and technology is salutary because it counters the recurrent tendency not only to conceive of the two as separate from one another but also to segregate each from their cultural roles. In language this tendency is misleading but quite understandable, since the structural organization of any language is so complex and distinctive that it almost seems to invite us to study it as a self-identical form and to make its cultural identity quite secondary (the same tendency, by the way, represented in the expressivist idea of language as a mere tool-of-thought). But the same segregational tendency is evident, at least potentially, for technology: the more complex it becomes (especially in today's electronic media, where language and technology are connected in an obvious way) the greater the temptation to treat it as a thing apart, a kind of alien within one's cultural lifeworld. This segregational tendency may be found even in studies seeking to relate language and culture. As the recurring theme and even the sub-title of Walter Ong's *Orality and Literacy: the Technologizing of the Word* would have it, language is to be conceived in two phases: its primal "natural" state in the spoken word and its mechanized state in advancing stages of technology (writing, print, videotext). My argument with this otherwise excellent study is that the language of tongue and ear is no less factitious, no less an apparatus of human labor, than is the language of hand and eye. Language does not predate technology; rather it stands, at every moment of human history, as the most extraordinary achievement of technology. Ong concentrates on the psychological consequences ensuing from the historical change from orality to literacy, but the same kind of segregational fallacy he reveals may also be found in many studies of electronic media (in the work, for example, of Michael Benedict, Meredith Bricken, and George Landow).

Keywords: language, technology, semiotic, segregational, orality/literacy

Session 6D: Science, Religion, and Philosophy (*Fulton Room*)

Chair: Lucia Palmer, University of Delaware

The Unbounded Finitude of Freedom and Facticity: Einstein's geometry and Sartre's existentialism; Christopher O. Griffin

This brief essay seeks to demonstrate a correlation between Albert Einstein's notion of unbounded finitude and Jean-Paul Sartre's philosophy of freedom and facticity. After touching on some slight differences between the thought of Martin Heidegger and Sartre, the essay looks to Einstein's geometry for what I believe to be a visual articulation of Sartre's abstract idea of absolute freedom. In conclusion, the essay offers brief comment on the situation of the behaviorist psychological perspective in relation to its "hard science" models.

Gerard Manley Hopkins's Nineteenth-Century Scientific, Industrial, and Technological Sonnet "God's Grandeur" as a *Cri-de-Cœur* in Response to Theories of Entropy; Antony Oldknow, Eastern New Mexico University

Hopkins was a Professor of Classics, Jesuit Priest, and major nineteenth-century British poet. Though, like many Victoria contemporaries, he was deeply nostalgic for selected aspects of the medieval past, he was also almost a "renaissance man": successful in several arts besides literature, as his literary work attests, he also kept himself informed of current developments in philosophy, science, and technology, and was a keen observer of many aspects of the natural universe. "God's Grandeur" is not an obscure work; indeed, its many anthology inclusions indicate that it is widely accepted by orthodox literary criteria as a masterwork. It is a Petrarchan sonnet, ultimately a medieval form, its first eight lines, or octave, setting forth a problem about love, its last six lines, or sestet, posing a solution to that problem--in this case, love of God and the earth and human beings' (specifically men's) attitude to both. Essentially, on the evidence of the text, God loves the earth, nurtures it, and always will, the love involved triumphing over men's rejection of God and over their short-lived trade lust which rapes and sullies the earth. Beginning apparently as a mild satire on the effects of nineteenth-century British industrialism-presenting a distorting-mirror image of a Britain that is *totally* defoliated and polluted, one vast mess of chemical wasteland--the text seems to invite uneasy ironic laughter, perception of personal and social flaws, and ameliorative reaction. However, the sestet, instead of embodying a clarion call for pro-active environmentalism, concludes the poem with a powerful reaffirmation of divine competence, the Holy Spirit having the power and desire to rectify the entire negative situation. The details that empower both the distorting-mirror image of Britain and the unlimited competence of God demonstrate Hopkins's more than amateur awareness of industrial processes and their effects, both positive and negative: metal and oil processing provide the initial imagery in the first four lines of the octave, the second four embodying powerfully onomatopoeic and multisensual allusions to both the interiors and exteriors of industrial factoryscapes. The sestet asserts divine potency through elaborate metaphor sequences suggesting that, whereas men have tried to convert the earth into a hydrogen-sulfide machine (bad-egg gas), the Holy Spirit as huge brooding dove, keeps the whole earth turning like the magnet of an electric motor, while simultaneously powering the water cycle from the water table and back--presumably with fertilizing nitrogen as a byproduct--as if the earth were a huge battery that the great dove as (in all senses) generator was continuously charging. Some of Hopkins's words suggest deep nostalgia for Eden, and he may be thinking of the expulsion from the garden as the initial act of universal entropy-nineteenth-century trade-induced British industrial pollution constituting cogent evidence of rapid entropic acceleration toward inevitable Armageddon. However, contradictory impulses suggested by the text seem also to reflect Hopkins's continuously agonizing philosophical and spiritual uncertainties as, in the face of the evidence of an entropy his religion might well endorse,

his love of reason attempts to assert the power of belief that a Creator creating perfection could not have incorporated ultimate decay in his plans.

Session 6E: Technobodies/Technominds: Technology and the Human Form in Science Fiction Narratives (*Georgia Room*)

Chair: Paula Geyh, Southern Illinois University
Organizer: Joseph E. Steinbach, Purdue University

Re-envisioning the Cyberbody: From *Neuromancer* to the "Virtual 90s"; Joseph E. Steinbach, Purdue University

Many theorists of cyber culture have argued that the dissolution of the physical body-in a technologically mediated arena such as "cyberspace"-allows for new and diverse explorations of identity construction and positions of subjectivity; race, gender and sexuality have been examined via the role technology plays upon them by allowing new and diverse subject positions previously denied by "nature." However, other theorists envision cyberspace as a landscape that reinscribes essentialist notions of physicality and patriarchy. Drawing from the works of such cybertheorists as Donna Haraway, Scott Bukatman, Claudia Springer, and others, this paper examines the literary cyberspace depicted by William Gibson in *Neuromancer* as a means of using technology to reassert the patriarchal order it threatens to overthrow by showing an over-reliance on essentialized notions of the physical form. By extension, current debate on the Internet as a site of free-play for diverse identity manifestations is problematized by an examination of the current practices of identity-play in such areas as MUDs and email, where the disembodiment of online encounters, while abstract and intellectualized, still maintain the physical body as an essential component and reference.

Cyborg Theory Revisited: Embodiment, Sex, and Gender in Feminist Cyberfiction; Claudia S. Smith, University of Delaware

This paper explores how feminist cyberfiction revises Donna Haraway's theory of the cyborg and its relationship to feminism's focus on gender. Because of its visionary nature, Haraway's "Cyborg Manifesto" is now taking center stage in cybercultural studies. The recent application of Haraway's cyborg theory to the new technologies of virtual reality, however, emphasizes contemporary (post)feminism's conflict in defining itself and its strategic goals.

By separating out strands of her argument, feminist theorists have interpreted Haraway's manifesto in two ways. Some feminists (e.g., Sherry Turkle, Amy Bruckman, and Eve-Lise Carlstrom) have chosen cyberspace as a location to test Haraway's prediction that gender difference will eventually disappear in the fusion of the human and (communication) technology. Other feminists like Susan Bordo and Margaret Homans have focused on Haraway's anti-essentialism, receiving her work as a poststructuralist theory of the disembodied female subject, which, by extension, simply reinforces the contemporary pressure for dematerialization. By reading fictional depictions of cyborgs, this paper argues, however, that Haraway's manifesto also lends itself to a third feminist interpretation, which would reconceptualize the theoretical foundations of gender difference (the separation of mind and body) by simply accepting the contemporary pressure toward the dematerialization of the body (understood as cyborgism) and by investigating how this might affect constructions of gender and sex.

This paper argues that the feminist cyberfictions *Up the Walls of the World* (1978) by James Tiptree, Jr., "No Woman Born" (1944) by C.L. Moore and *He, She, and It* (1991) by Marge Piercy amplify the ambiguity toward feminism's central category of gender in Haraway's manifesto, in which she insists on the femaleness of her cyborg figure but simultaneously envisions the disappearance of gender. By drawing on these fictional examples, Haraway's theory can be re-read as theorizing a "posthuman body," which is not disembodied and degendered, but rather a

"newly embodied," technologically enhanced female body, which enables its oscillation in and out of what we now understand as sex and gender.

Third-Order Cybernetics and Dialogic Autopoiesis: Self as System in *The Singing Detective*; Scott Melanson, Purdue University

The main character of Dennis Potter's British television film, *The Singing Detective*, is a detective novel writer who is hospitalized by a completely debilitating skin disease. Aptly named Philip Marlow, this character deals with his isolation and helplessness by convincing himself that he has the power to fashion himself, his hospital environment, and his various memories and fantasies into fiction through his novel writing. He becomes, in effect, his own two-dimensional main character, living in a safe and predictable world. However, this tight control over his reality is undermined by his own body; unable to regulate his temperature, Marlow's ward mates, figures from his painful childhood, and ultimately his own novel characters, run wild in his hallucinations, recontextualizing his own words to throw back at him in ways he never thought possible.

Using Humberto Maturana's and Francisco Varela's ideas of autopoiesis, evolutionary structural coupling, and third-order cybernetics, combined with M.M. Bakhtin's concept of the polyphonic novel, this paper will examine Marlow's gradual discovery that he is not a unified self, "trapped," as he says, in his "own skin and bones"; that there is no real split between his body and mind, and that he is, as all human beings are, an autopoietic nervous system, interacting dialogically with other nervous systems.

Techno-Family Values: Reproduction and Male Anxieties in Science Fiction; Deborah M. Mix, Purdue University (read by Joseph E. Steinbach)

Much of the criticism on cyberpunk/sci-fi has focused on the incursions of technology into the body--the already existing body, that is. But what about the technology that could build a body from start to finish, that could create a living being-human or otherwise--independently of the "usual" reproductive process? What about a technology that puts reproductive power into the laboratories of scientists? Out of the wombs of women and into the hands of men? Babies in bottles and Schwarzenegger movies notwithstanding, this is the stuff of science fiction, a logical step from dreams of artificial intelligence to realities of invented bodies. This is a world where sperm and eggs, X and Y chromosomes, even women, are obsolete.

We might be inclined to think that this is the kind of plotline that science fiction would embrace, particularly given the chauvinism of some of the "canonical" works in the genre. In this future world, women may still be good for "only one thing," but that "thing" will no longer have the potential wife and family strings attached. Yet several works in the genre of science fiction novels and film, works written/directed by men, seem to point to a more ambivalent sense of this kind of potential. Philip Dick's *Do Androids Dream of Electric Sheep?*, Ridley Scott's *Blade Runner*, and William Gibson's *Neuromancer* all suggest that this realm, perhaps, is one into which some men are not yet willing to boldly go.

What I investigate in this paper and as a part of this panel is the intersection of reproductive power and male anxiety. What we see in these novels and film are men who have control over a final frontier (of sorts) but who can't seem to maintain that control. Instead, the beings they create spin dangerously out of control --destructive androids, deadly replicants, nightmarish generations of a gothic family. But why this trepidation? I suggest that it stems from larger concerns not only about power but also about the related issues of gender roles and social hierarchies.

Session 6F: Aspects of Science and Culture (*Piedmont Room*)

Chair: Bruce Clarke, Texas Tech University

Punctuated Equilibrium or Steady State Language Change; Lesa Dill, Western Kentucky University

Punctuated equilibrium is the theory about the development of biological speciation in geological time. The theory states that changes arise from branching events in speciation rather than from anagenesis or total transformation and that after the rapid origin of these events, species undergo lengthy periods of stasis. In language the periods of stasis are represented as directionless variation or as Stephen J. Gould calls it fluctuation that affects lineage, in this case language lineage. This stasis is manifested in internal recalcitrance--variation promoted not from without but from within.

Branching events in language evolution result ultimately in the origin of new languages and are motivated by external forces. Cognate comparisons therefore are stasis analysis, cognates resulting from internally motivated phonological drift. These stasis studies are an integral part of language history and reflect long linguistic eras. However, cognate studies are insufficient in delineating the kinds of change that motivate the origin and development of what is at a later date called a separate distinctive language.

Studies concentrating on externally motivated change such as those produced by contact between language groups present a completely different picture of language relatedness that has been largely ignored. Externally motivated changes produce relatedness by hybridization and are as evolutionarily valid as the historical "genetic" studies of traditional linguistics.

A Theory of Everything: V. V. Nalimov's Textual and Probabilistic Model of Evolution; Mary Ellen Pitts, Western Kentucky University

The Russian statistician and metallurgist V. V. Nalimov (b.1910) has in four books (*In the Labyrinths of Language: A Mathematician's Journey*, 1981; *Faces of Science*, 1981; *Realms of the Unconscious: The Enchanted Frontier*, 1982; and *Space, Time, and Life: The Probabilistic Pathways of Evolution*, 1985) attempted to create a synthesis of his scientific work with readings in linguistics, philosophy, evolutionary theory, environmental studies, and transpersonal psychology. From such a polymath are likely to come ambitious explorations of broad theoretical perspectives. An omnivorous reader, Nalimov approaches the world as text and takes as his starting point for explaining this world text the eighteenth-century Bayesian theorem (which he describes as both metaphor and syllogism),

$$p(\mu/y) = kp(\mu)p(y/\mu) .$$

Nalimov's pursuit of the Bayesian syllogism leads to his explanation of the text of the world--and the text of biological life--as a semantic field, which is "unpacked" as evolution occurs. His theory leads to the notion of a hierarchy of chance in this unpacking of the semantic field and to positing a non-Euclidean basis for morphogenetic laws. Questions of the relationship of space and time in biology, Nalimov contends, are fairly recent because they emerged only after biological science and computer technologies came in contact with each other.

Starting, then, with the notion of the world as text, Nalimov follows in this last book the "geometrization" of knowledge that he has treated earlier, turning here to the geometrization of biology to pursue evolution in terms of "probabilistic spaces" and then to compare biological evolution with the evolving "texts of culture." The approach is at once a kind of "theory of everything" and a reexamination of traditional notions of randomness itself as well as randomness in biological evolution.

T. H. Huxley and Steven Weinberg: Science and Culture at a Century's Distance;
Joseph Carroll, University of Missouri - St. Louis

In his classic essay "Science and Culture," T. H. Huxley argues that the whole modern world view has been fundamentally transformed by science and that all cultural commentary must now submit to the authority of established scientific knowledge. For Huxley, the authority of science is secured by three fundamental propositions: that nature forms a unitary order, that science forms a unitary field of knowledge concordant with the order of nature, and that science is a progressive, cumulative enterprise. All three of these propositions are now strongly contested--either "problematized" or roundly rejected--by a majority of the scholars occupied in the field Huxley helped to define: the study of science and culture.

After the debate at mid-century between Snow and Leavis, the two culture shave gone pretty much in their own separate directions. The scientists have concerned themselves with science, left humanities to the critics and scholars, and worried little about general cultural theory. As a result, in the past two decades, discussions about the relations of science and culture have largely been a one-sided affair, with the proponents of cultural construction speaking only among themselves, mutually confirming their own suppositions. Recent events suggest that this situation is about to undergo a dramatic change. At the 1995 SLS conference in Los Angeles, the single most common topic of conversation was Gross and Levitt's *Higher Superstition: The Academic Left and Its Quarrels with Science*. The members of the SLS clearly identify themselves as central targets of attack in this book, and the book itself has achieved national prominence in defining an ideological struggle that has recently gained even greater public attention through the hoax successfully carried off by Alan Sokal.

Working from a point of view incompatible with that of the cultural studies of science, a growing body of theorists, scholars, and critics are making serious efforts to integrate the study of literature with the larger body of established scientific knowledge. Some, like Paisley Livingston, propound a realist and rationalist philosophy of science and identify a range of empirical studies, including economics, psychology, sociology, and artificial intelligence, that are all relevant to literary scholarship. Others like Nancy Easterlin, Robert Storey, Frederick Turner, Alexander Argyros, Koen DePryck, and Joseph Carroll, drive toward a unification of all the human sciences, including the humanities, within the field of evolutionary biology.

I would argue that the proponents of the movement toward a realist, rationalist, and empirical form of literary study must ultimately affiliate themselves with Huxley's three central principles: the unity of nature, the unity of science, and the progressive nature of scientific understanding. These ideas now have distinguished proponents among Huxley's successors, that is, scientists who are competent to discuss the progress of science from an insider's perspective but who also have the gift of writing intelligibly for generally educated readers. Among these proponents, the one writer who most explicitly situates himself in Huxley's ideological lineage is Steven Weinberg, a Nobel physicist and author of such impressive works as The First Three Minutes, The Discovery of Subatomic Particles, and Dreams of a Final Theory. In this latter work, a collection of essays, Weinberg adopts the title of one of Huxley's essays, "On a Piece of Chalk, "as a starting point for narrating the progress of physical science since Huxley's time. Still more recently, Weinberg has commented prominently on Sokal's hoax. He thus provides a useful point of reference for considering the relevance of Huxley's ideology to the current polemical situation. Aligning myself with Huxley and Weinberg, I shall contrast their ideology with the views now dominant in the cultural study of science, and I shall sketch out the way this ideology should influence the study of literature and culture at the present time.

Educating the Senses: Proust, Art and the Question of Technology; Sara Danius, Duke University

My paper is a discussion of the aesthetics that informs Marcel Proust's influential novel "A la recherche du temps perdu" (1913-1927). It is a reading against the grain: I propose that numerous of Proust's stylistic strategies and formal solutions are conditioned by what may be called a "kinematographic logic", despite the fact that Proust, emphatically and repeatedly, criticized cinematography. On his view, cinema was a mere mechanical means of cultural production. The analysis of how Proust appr opriates uniquely cinematic techniques brings into focus Etienne-Jules Marey's chronophotography and Taylorization, among other things, arguing that the information one may obtain on these technoscientific systems is also information on Proust's notion of the importance of a non-utilitarian aesthetics and how to cultivate the senses. The paper is part of a larger project which articulates the relations of emerging technologies and the aesthetics of Modernism in 19s Europe. The project has two aims - to theo rize the question of technology and to re-read canonical Modernist novels. Ultimately, the investigation is an attempt to historicize the emergence of Modernist aesthetic innovations in an age during which (technologized) mass culture was perceived as posing a threat to time-honored cultural practices.

Keywords: literature and technology/history of literature/cinema/perception /art theory/aesthetics/body/visual technologies/dialectics

Saturday, October 12, 9:30 - 10:00 am: Refreshments (*Habersham Room*)

Saturday, October 12, 10:00 - 11:30: Session 7

Session 7A: Modernist Women: Gertrude Stein and Virginia Woolf (*Ansley Room*)

Chair: Holly Henry, Pennsylvania State University

Beyond Organic Form: Gertrude Stein and Johns Hopkins Neuroanatomy; Steven Meyer, Washington University

In 1897 Stein moved from Harvard, where for the previous three years she had conducted experiments at the Harvard Psychological Laboratory under William James's supervision, to the Johns Hopkins Medical School in order to acquire the hands-on physiological training that James deemed necessary for further study in psychology. At Johns Hopkins she was soon working in the Anatomical Laboratory with the great anatomist and embryologist Franklin Mall and studying the histology of the central nervous system with Mall's assistant Lewellys Barker. In his influential textbook on *The Nervous System and its Constituent Neurones* (1899) Barker cites a description by Stein of an obscure collection of nerve cells situated near the top of the midbrain. Years later he wondered whether his "attempts to teach her the intricacies of the medulla oblongata had anything to do with the development of the strange literary forms with which she was later to perplex the world" (1942). It is this question that I shall address here.

Stein's writing, I shall argue, is both premised on and exhibits an organicism divorced from traditional notions of organic form and organic unity, an organicism that can accommodate the most disjunctive writing of this most disjunctive of writers as well as make sense of her trajectory from student of neuronanatomy in the late 1890s to lecturer in the 1930s on the *life* that words possess. Her sense that words, in certain circumstances, possess a life of their own needs to be distinguished from the traditional Romantic analogy of the work of art to a growing plant. Rather than assuming a vegetative model-as well as the related notion of organic unity which played such a crucial role in the conception of poetry of the American New Criticism--Stein's organicism is premised on the model of the central nervous system with which she became acquainted at Johns Hopkins. The chief difference between Stein and William James concerning what James called "nerve-physiology" in *The Principles of Psychology* (1890) stems from the articulation in 1891 of what has come to be known as the neuron doctrine. Before 1891 it was intellectually respectable for a neuroanatomist to argue for the reticular theory of neural organization, that is, for the existence of a continuous network of branches connecting nerve cells; after 1891 it was widely recognized that nerve cells, like other types of cells, are discontinuous from one another. Furthermore, the year that Stein entered medical school Charles Sherrington introduced the concept of the synapse as "an anatomical and functional explanation for the mechanism by which the individual neuronal units could communicate with each other. Hence Stein, in her first two years at Johns Hopkins, much of the time spent conducting laboratory research, found herself in the midst of a paradigm shift if ever there was one. The crucial thing to note is that in taking neurons, as described by the neuron doctrine, as Paradigmatic of organic life, it becomes necessary to reconceive organicism as a function of "contact or contiguity" rather than of "organic connection" in Lavellys Barker's phrasing in *The Nervous System and its Constituent Neurones*. This is the perspective that Stein brought to her experimental writing.

Stein's writing practice may thus be viewed as a form of laboratory science-descending, by way of the Psychological and Anatomical Laboratories at Harvard and Johns Hopkins, from the medical laboratory described by Claude Bernard in his *Introduction To the Study of Experimental Medicine* (1865) -in which she experimented with words in an attempt to articulate her sense of their life: life understood on the model of the nervous system. "[I]n anyone," she insisted in a lecture on "Portraits and Repetition" (1935), "I must find out what is moving inside them that

makes them them, and I must find out how I *by the thing moving excitedly in me* can make a portrait of them." Her writing consequently needs to be understood as consistent with the sort of imaginative leap that the visionary geneticist Barbara McClintock made in her work on maize, a leap that required, in McClintock's terms, a "feeling for the organism" as something more than its parts, more than its past, more than its purely mechanical features.

Charting Three Lives: Gertrude Stein, Experimentalism, and Authority; Daylanne K. English, University of Virginia

Gertrude Stein wrote *Three Lives* in 1905, not long after she left Johns Hopkins medical school after four years of study there. *Three Lives* (1909) simultaneously documents transitions in Stein's life, in the development of modern clinical medicine, in the history of literary studies, and even in the population demographics of the U.S. For example, the professionalization of literary studies that coalesced around "difficult," experimental texts (like Stein's) coincided with the "birth" of modern, professional medical specialties such as obstetrics and psychiatry. Suggestively, both the emerging medical specialties particularly and obviously obstetrics) *and* modernist literary-artistic projects depended upon modern physicians and artists' willingness to experiment on and with female bodies/subjects.

Stein's formally innovative *Three Lives* represents both medical documentation of, and literary experimentation on, its female characters. The text offers a fictional "treatment" of the lives and deaths of two immigrant "german" servants, Anna and Lena, and one typically "tragic" mulatto woman, Melanctha. Set in "Bridgepoint," a thinly veiled Baltimore, *Three Lives* reflects not only Stein's literary radicalism, but also her experiences as a medical student providing care to the city's poor, largely African American population. Suggestively, Stein's original title for the book was *Three Histories*, and the three stories are, in fact, fictional medical histories; generic hybrids, they negotiate the common ground between medical and literary authority. At the same time, *Three Lives* reveals Stein's ambivalent investment in such authority, along with her partial resistance to the modern physician-patient relationship, especially that between female patient (subject) and male physician (author).

Stein's investment, however ambivalent, in a modern and sometimes oppressive medical-literary model challenges the often reflexive yoking (by both literary critics and science historians) of avant-garde experimentalism with liberatory or progressive politics. For example, *Three Lives* does emerge, at least in part, out of Stein's worry about the particular toll of "labor" (in both its productive and reproductive senses) on working class women's bodies. Each of the stories centers on either immigrant or black women's fertility and its regulation. So, on the other hand, what could then be called the "obstetrical allegory" of *Three Lives* also expresses racial and nativist anxieties peculiar to American modernism. In "Melanctha, " for example, Stein displaces her ambivalence about medical-literary authority onto racialized bodies as either sites of resistance (as with the "pale yellow" Melanctha) or of clinical inscription (as with Melanctha's "black" friend Rose Johnson).

So, even as Stein seeks in *Three Lives* to construct, through experimentalism, a somewhat more flexible "reading" of the doctor-patient relationship -- or, alternatively, the narrator-character relationship -- she also partakes of a "clinical" authority articulated through immigrant and African American female bodies-subjects. The book represents, then, a particularly rich nexus of nativist, racial, literary and medical anxieties which characterized the U.S. in the modern era. Discourses of science and medicine, like literary discourse, however innovative and apparently progressive, nevertheless reflected the anxious responses of artists, physicians and scientists to unprecedented levels of foreign immigration to, and domestic (largely African American) migration, within the U.S.

"The Higgledy-Piggledy Puzzle" A Fractal Analysis of the Patterns of Patterns in Virginia Woolf's Fiction; Josephine Carubia, Penn State University

At the end of Virginia Woolf's penultimate novel, *The Years*, Eleanor Pargiter expresses the author's fundamental life-long question, "Is there a pattern ... a gigantic pattern, momentarily perceptible?" (369). In this essay I will discuss a series of images and structural devices in Woolf's fiction that constitute an answer to this question. I will suggest that Woolf's characteristic imagery of trees, bubbles and streams, waves, flights of birds, and urban flux are, in principle, akin to fractal geometry, a theory explaining that natural patterns inexplicable in Euclidean terms—plant structures, cloud formations, fluid turbulence, and the human vascular system, for example—are based on nonlinear reiterations and highly complex symmetries that are mistakenly dismissed as chaos and disorder. In Woolf's fiction, these and other devices contribute to an epistemology based not on accurate prediction and absolute certainty, but on sensitivity to the effects of incremental change and acceptance of an infinite regression of complexity. My discussion will touch upon Mrs. Ramsay's relation to chaos in *To the Lighthouse* and will show how the weather interludes in The Years establish a fractal paradigm for the rest of the novel. In support of my thesis I will show that Woolf develops images of the intertwining of Euclidean and fractal paradigms, for example Helen Ambrose's tapestry in *The Voyage Out* with its underlying linear warp and woof and its constituent patterns of jungle and river. Similarly, I will show how, in several novels, Woolf conceives the image of the city as built on gridlike straight lines infused with the ineluctable, seemingly higgledy-piggledy, flux of human activity. Throughout the paper, I will focus on the principles of fractal geometry that illuminate Woolf's quest for models of human connection and knowing that resist totalizing schemes of all kinds, including totalitarianism. In my discussion of Woolf's complex patterns of imagery I will take advantage of recent work on the nexus of the arts and fractal geometry by artist Rhonda Roland Shearer and literary theorist N. Katherine Hayles, in addition to the work of Benoit Mandelbrot and others.

Session 7B: Virtually Speaking: Sounding the Depths of Cyberspace (*Ardmore Room*)

Chair: Greg Vanhoosier-Cary, Georgia Institute of Technology

The recent explosion of national interest in the Internet and cyberspace has already had profound effects on nearly every discipline in the academy, and promises to continue to do so. Although they are now considered stepping stones on the way to a more fully realized virtual reality, MOOs (Multi-User Dimensions, Object-Oriented) provide the interested scholar with the opportunity to explore the many implications of cyberspace. Taking as its starting point such text-based virtual realities, this panel considers MOOspace from a number of perspectives operative in contemporary English Studies. Collin G. Brooke considers several cyberspace narratives and argues that the literary theorist Roland Barthes may provide the key to developing an ethics of cyberspace. Beth E. Kolko examines how "narrative strategies" and "authorial acts" in cyberspace serve to politically and epistemologicalIy redefine identity. Alan P. Taylor revisits the orality-literacy work of Waiter Ong to argue that much of the discourse in cyberspace can be understood as "secondary literacy. In each case. technology provides an occasion for returning to theories of language and literature as sites of intersection and invention, producing provocative insights that impact upon cyberspace as well as the perspectives that attempt to articulate it.

M00thologies: Rhetorical Alibis in Cyberspace; Collin Brooke, The University of Texas - Arlington

Accounts of cyberspace, from William Gibson's fiction to the hype surrounding virtual reality technology, were greeted in the academy with unbridled enthusiasm. Although our imaginations have so far outpaced our technological ability to satisfy them, there is a consensus that this will change. Already, educators have begun to explore the possibilities presented by VR, in the form of MOOs and networking software. Richard Lanham's 1991 call for the "wiring" of the humanities is already being met as these text-based virtual realities gain in pedagogical and professional popularity. With this increased currency, virtual reality has not gone unquestioned or unexamined by cultural critics. The initial optimism focused on the ways in which cyberspace might free us from the restrictions placed upon us by geography, gender, ethnicity, age, appearance, etc. A second wave of critics is pointing out, though, that there are still material questions of access, language usage, and other factors that are not quite so easily discarded as we "leave our bodies behind."

Cyberspace has been subjected to an "ertthusiasm/backlash" model of examination that recalls similar conversations about deconstruction, postmodernism, and assorted other cultural/literary/rhetorical theories. Many conversations about cyberspace follow the topos of "ludic vs. resistance" theory set out by Teresa Ebert, or the more contemporary "performative vs. materialist" debate being played out in gender studies. This paper enters the discussion at the point of the materialist critique of cyberspace, and focuses upon identity as it is constructed in text-based virtual realities (particularly MOOs).

My paper contends that identity in cyberspace does not constitute an escape from the body, contrary to the more optimistic cyberspace critics. Neither does it yield so simplistically to Robert Markley's critique of a ludic "rhetoric of the new," however. In order to problematize both positions, I turn to Roland Barthes' book *Mythologies* for a possible explanation of what it means to develop an identity in cyberspace. Drawing on essays by Julian Dibbell and Allucquere Rosanne Stone, I hope to demonstrate that identities undergo a process in cyberspace that I term "self-mythification." Self-mythification doesn't indicate an escape from materiality, but an extension of it, albeit a technologically, semiotically mediated one. In Dibbell's and Stone's narratives of violation, self-mythification provides the aggressors in each case with what Barthes calls the

"perpetual alibi" of mythology. Barthes' response, perhaps an early ancestor of Donna Haraway's ironic cyborgism, is to suggest a dynamic position from which multiple strategies of interpretation and intervention are made possible. I claim that it is this multiplicity of strategies upon which an ethics of cyberspace must found itself. The work of Barthes, reunderstood in a technological context, provides an essential first step towards such an ethics.

Keywords: cyberspace, identity, mythology, virtual reality, MOOs, materialism

Situating the Virtual Self; Beth E. Kolko, The University of Wyoming

The discourses of anxiety and fear, not to mention ignorance, related to cyberspace are eloquently illustrated by the recent passage of the Communications Decency Act. The CDA, ostensibly about preventing the spread of child pornography, attempts to regulate all language used over the Internet. Although the provision is unlikely to remain on the books for very long, like CompuServe's recent attempt to block out access to "offensive" newsgroups, it is an example of the censorship gestures that have accelerated as the numbers of Internet users grows. I would argue that the anxious reaction to this growth has a variety of sources, including the fact that widespread literacy is a threat to institutional structures. This paper, however, will concentrate on the ways cyberspace provides a way of rethinking boundaries of time and space and self. Using the concept of the illegible subject Allucquere Rosanne Stone draws from Gloria Anzaldua, and Edward Soja's assertion of spatiality as an underutilized construct in contemporary social theory, this paper will argue that the narrative acts that constitute participation in virtual worlds provide a particular inscription of the self as an agent within space and time, an inscription that presents an interesting gloss on contemporary thinking about narrative ethics.

Stone asserts, and I would agree, that "no matter how virtual the subject may become, there is always a body attached . . . consciousness remains firmly rooted in the physical." Some examples of entering a virtual world, however, attempt to belie this fact. I can seemingly leave my physical self, and exist discursively, through the self I create via words. But if we reject the idea that my consciousness then becomes rooted in the machine, if we reassert that importance of materiality, and the placement of that material existence we have a particularly weighted way of looking at the consequences of my writing online, of my narrating, describing, storytelling in conjunction with other virtual presences. Soja claims that spatiality overlaps with physical and psychological spaces. The spatially displaced (but not effaced) self of cyberspace, then, is politically and epistemologically redefined. And it is narrative strategies and collaborations, discursive choices, authorial acts through which that redefinition takes shape. Ultimately, then, the spatiality of social life which Henri Lefebvre theorized provides a provoking framework through which to examine both the patterns and consequences of interactions in a text-based world.

Keywords: cyberspace, MOOs, identity, narrative, epistemology, social theory

(Re)Visions of Virtual Space: Secondary Orality to Secondary Literacy; Alan Taylor, University of Texas - Arlington

Jay David Bolter describes electronic writing as a medium that "grows naturally and easily out of the late age of print." Contemporary understandings of the virtual environments made possible by the electronic revolution, whether blindly enthusiastic or cynically cautious, echo this sentiment more often than not. Drawing on the work of Waiter Ong and Marshall McLuhan, theorists of virtual space ground their perspectives in "secondary orality," understood as the primary modeling system for knowledge in the late twentieth century. This position is not without merit. Web browsing applications, like Netscape, allow the user to surf on a sea of titillating pictures and sound. To the degree that the current technology permits, the web pulls the reader into a visual and auditory field--a spectacle specifically designed to appeal to the increasingly "oral" manner in which we understand the world. Those who would resist the information revolution argue that, as

its effects are felt by greater and greater numbers, literacy will become increasingly supplanted by secondary orality.

While this argument holds up when we consider web browsing, the same can not be said for other Internet interface technologies like newsgroups, electronic mail, IRC (Internet Relay Chat), and MOOs. Communication through these media is fundamentally literate. In this sense, the electronic revolution can be better described not as an extension of secondary orality but as a dramatic shift to "secondary literacy." In his essay "You Say You Want a Revolution," Stuart Moulthrop argues that the shift from secondary orality to secondary literacy promises to Preserve the literacy that we, as readers and academics, value and see disintegrating before our eyes. While virtual environments are clearly literate, my paper will suggest that this secondary literacy is fundamentally marked and organized across the paradigm of secondary orality. As Ong suggests that secondary orality never completely divorces itself from the paradigm that preceded it, I suggest that Internet technology still shares much with the secondary orality which preceded it. From acronymic representations of verbal events like LOL for "laugh out loud" to the diacritical marks, called "emotions," which represent smiling, winking, and frowning, this new kind of literacy is permanently marked by the oral tradition out of which it arose.

As Geoff Sire argues in his essay "Writing in the A & P Parking Lot," electronic discourse represents a fundamental break from traditional concepts of literacy. This is a new beast, and we, as teachers and scholars, ought to revisit electronic discourse, reexamine its potential, and revise our understandings of this nascent paradigm.

Keywords: postmodernism, secondary orality, secondary literacy, literacy, Internet, Waiter Ong, MOO, IRC, writing, theory

Session 7C: Cultural Studies of Technoscience: HIV, AIDS, and Medicalization (*Brookwood Room*)

Chair: John Nguyet Erni, University of New Hampshire

Cold War Science and the Body (Politic): An Immuno/Virological Approach to Teaching *Angels in America*; Daryl S. Ogden, Georgia Institute of Technology

As Cindy Patton argues in *Inventing AIDS*, the foundational metaphors of **virology** and **immunology** in the United States can be traced back to **Cold War** cultural formations which were ascendant during the 1950s and 1960s. Whereas the post World War II discourse of virology was greatly predicated on fears of an enemy Other's invasion or infiltration of the Self, the language of immunology constructed the Self as Other, and put forward the notion that the Self/body actually turned against and betrayed its own fragile immune "defenses." Although they both were born and matured during a ferment of Cold War anxieties, virology and immunology emerged as highly incompatible explanatory models of **sickness** and **disease** which drew in large measure on two very different Cold War horrors: virologists postulated the existence of dangerous enemies beyond the body's borders but capable of violating those borders (like the Soviets and Red Chinese) while immunologists warned Americans of formidable enemies within the body politic (like members of the American Communist Party). Not until the emergence of **HIV** and **AIDS** in the late 1970s and 1980s did virology and immunology form a reluctant détente in an effort to explain the mechanisms of an unusual virus which apparently attacked the body's immune system.

In chronicling the tale of these two sciences, what emerges is a highly productive pedagogical approach for discussing the multiple cultural, political and scientific meanings of Tony Kushner's *Angels in America*. In a classroom setting, Kushner's play synthesizes the historical phenomena of virology and immunology by exploring **homosexual identity** through two "closeted" characters -- the Cold War figure of Roy Cohn, Joseph McCarthy's chief counsel during the Communist Senate hearings of the early 1950s and his neo-Cold War disciple, Joe Pitt -- and their "out" counterparts -- Louis, Prior, and Belize. In this talk I shall explore how teaching the history and discourse of virology and immunology in the context of *Angels in America* provides students with a way of understanding how AIDS victims -- particularly homosexual victims -- were set off from and vilified by the rest of the body politic in the early 1980s in ways similar to how members of the American Communist Party and other left wing organizations were persecuted in the 1950s. I will demonstrate how the saturated historical consciousness of *Angels in America* -- with its emphasis on shifting back and forth between McCarthyism and Reaganism through the: characters of Roy and Joe -- opens up a critical space for investigating the discursive and experimental development of virology and immunology during their formative Cold War decades.

The Diseased Pariah Fights Back: AIDS and the Rhetoric of Humor; Carol Reeves, Butler University

AIDS is probably the first epidemic in human history to be touched by the satirical pen of the infected. On example is the *The Diseased Pariah Newsletter*, DPN, published in San Francisco since 1991. DPN is a satirical insurrection against representations of the HIV+ community and people with AIDS as icons of nobility and courage or innocence or degradation. It is a manifesto of the right to be "cranky," "sacrilegious," and "whiny" as well as critical, instructive, and reflective about AIDS science and medicine, safe sex education, sereonegatives, funerals, credit card bills, politicians, and prejudice. Finally, the writers consciously revolt against what they consider the absurd, extremist, and hypocritical discourses of AIDS on both the left and the right, believing it is ultimately better for them and for their community to occupy what editor Michael Botkin calls, "the middle discourse of AIDS," the cynical/satirical. At the time he was diagnosed with HIV in 1988, editor Michael Botkin was already familiar with two discourses appropriated by the HIV+

community and their advocates: the activist rant--"I'm mad and I'm not going to take it anymore"--whose high priest was Larry Kramer--and the new-age individualism ("Visualize those T cells; use the power of your own consciousness to make you well")-- whose high priest was Louise Hay. There was also an up and coming academic left using phrases such as "AIDS is an epidemic of signification," (Paula Triechler) and happily applying poststructuralist theory and agendas.

For Botkin and his colleagues, these discourses all served important purposes but erased too much of the truth, too much of the actual experience of being an infected "pariah." Drawing on the traditions of black humor and gay camp, the cynical-satirical voice of DPN "gets away with telling the truth. Our theme is generally 'It's my party and I'll die if I want to,'" says Botkin. But they are able to straddle the two other discourses--to maintain the bitter edge of the rant as well as the self-help agenda of new age individualism and still get people to laugh--and listen.

As Freud maintained, the humorous attitude is like denial in that it refuses to be destroyed by painful experiences, but unlike denial, it also refuses to erase those experiences. For a small group of HIV+ writers in San Francisco, the middle discourse allowed them to challenge the "sacred" and the "absurd" in all directions and to Present the living and dying experience of AIDS honestly. (The presentation will include a discussion of sample material from DPN and comments from my interviews with the writers.)

Rhetoric and the Cultural Networks of AIDS Technoscience: The Case of HIV Home Testing; T. Blake Scott, Pennsylvania State University

In this paper, I present a cultural and rhetorical study of the ongoing controversy about the approval of an HIV test system involving home sample collection. This controversy blurs distinctions between internal and external scientific networks and rhetorics, complicates traditional notions about science's roles in the public and private spheres, and foregrounds larger issues about HIV testing. The theorists on whose work I draw include Bruno Latour and Michel Foucault. I model my methodology, in part, on similar work by Greg Myers and Craig Waddell, two rhetoricians of science.

My study has three dimensions. First, it centers on a rhetorical analysis of a transcript of a Food and Drug Administration Advisory Committee meeting held on June 22, 1994, a pivotal event in the controversy. In this transcript, an example of science in action, scientists, public health professionals, activists, and others argue about HIV home sample collection and, more specifically, the approval of Johnson & Johnson's home blood collection kit--Confide. I analyze the rhetoric--here defined as both argumentation and the mobilization of resources (Latour)--of some of these participants.

Second, I supplement my textual analysis by briefly exploring part of the transcript's intertext, including other government documents, correspondence among activists and government officials, and short articles in biomedical and popular media texts. This allows me to trace the production and reception of the transcript as well as trace the shifts in the HIV home testing debate that began as early as 1987.

Third, I overview the cultural context, outlining a few of the networks of AIDS biotechnology at play in the above mentioned transcript and the larger HIV home testing controversy. These complex networks extend to government agencies, conservative and leftist AIDS activist organizations, pharmaceutical and health care companies, scientific and professional health care organizations, the mainstream press, and the gay press (I do not outline all of these).

Keywords: AIDS/HIV, HIV testing, HIV home collection kits, FDA, cultural studies of science, external rhetoric of science, technoscience, networks

Scientific Semen: Cultural Messages and Scientific "Objectivity" in Pamphlets on Sexually Transmitted Infections; Julie Veddar, Pennsylvania State University

At a time when cultural descriptions of adolescent and non-marital sexual activity have become narratives of infectious crisis, health professionals and activist groups are focusing their attention on educating people about STI (**sexually transmitted infection**) transmission and the importance of safer sexual practices. However, as cultural critics as varied as Emily Martin, Donna Haraway, and Sandra Harding have shown us, science rarely transmits itself innocently into the cultural bodies of human beings. Thus, heightened scientific and cultural attention to morally sensitive issues of sexuality begs the question of what **normalizing and/or medicalizing model of behavior** is transmitted along with biological information.

To explore this discourse of sexuality, looked at two specific sites of information: a woman's health clinic which is part of a larger university health service, serving a mostly white, middle-class population, and a Planned Parenthood clinic serving a more economically and ethnically heterogeneous population. In each I explored the differing written discourses on STIs that are available to patients, primarily pamphlets and fact-sheets. I will couple this information with a growing body of popular personal narratives about **safer sex** to examine the efficacy of underlying assumptions in the medico-scientific discourse that presumes unsafe sex is merely the result of a lack of information. I will also situate my work theoretically within a Foucauldian inspired focus on the **effects of discourse on specific and physical bodies**.

In this paper, I hope to raise questions about the ways in which science and behavior interface with one another along a culturally sensitive subject such as sexual intercourse, and what implications such interaction has for both **"objective" and "situated" views of science**.

Session 7D: Edges of Difference: Post-Colonial Epistemologies (*Fulton Room*)

Chair: Kavita Philip, Georgia Institute of Technology

Bateson/Derrida: Ecologies of Mind and Difference; Phil Kuberski, Wake Forest University

Abstract not available

Material Bodies/Virtual Minds; Jaishree K. Odin, University of Hawaii at Manoa

Recent studies theorizing cyberspace in terms of virtual electronic communities or total sensory-immersion VR scenarios have tended to ignore the materiality of bodies. The proliferation of virtuality all around us has turned major aspects of our lives into bits of information that reside as invisible electromagnetic patterns on silicon microchips of major financial, medical or governmental organizations. As the stuff out of which our lives are made gets increasingly translated into binary codes, it is easy to fall prey to constructions of the body in cyberspace that deny the material basis of existence by indulging in fantasies of electronic disembodiment. The old Cartesian mind/body duality is pervasive in the descriptions of electronic agoras in both fiction and non-fiction. Whereas fictional representations of the virtual body are mostly gendered, the nonfictional representations tend to ignore race, gender, and class issues altogether. In descriptions that come from the architects of cyberspace, we see a strange indifference to the fact that cyberspace is an integral part of the material space--the former has meaning only in relationship to the latter. I argue in my paper, that in order to give empowering descriptions of our experience in cyberspace, we must take into consideration the materiality of our body. No matter how much time we spend in participating in online virtual communities or VR worlds of the future that involve total sensory irmnersion, we must ultimately return to the body which is the locus of our physical embodiment out of which our virtuality as well as materiality takes shape. Any construction of the virtual body thus can not be conceived apart from the materiality of the body.

Between-Time: The space of transformation; Paul Harris, Loyola Marymount University

Abstract not available

Session 7E: Environment and Nature (*Georgia Room*)

Chair: Richard Grusin, Georgia Institute of Technology

Recapturing Words: Quasi Objects & * Identities in Environmental Narratives; Mark Jenkins, University of California - San Diego

Bruno Latour's 'quasi-object' offers the promise of a structure that escapes the reductive binary economies of modern epistemological discourse, while providing an alternative to the cynical 'post-histories' of postmodern anti-identitarian thought. Deleuze & Guattari's 'assemblages' offer similarly useful resources for refiguring the structure and capacities of critical thinking in a culture characterized by identity questions of irreducible complexity. Latour's analysis of hypridity as simultaneously discursive and irreducibly factual has the potential to function as a Deleuzian concept – a tool arising pragmatically in response to the needs of material and discursive situations. In this paper I will argue for a particular critical application of these ideas as a way toward a necessary refiguring of the terms of environmental discourse.

Current environmental discourse on both the right and the left is mired in a narrative economy which creates its objects – from animals to ecosystems – using rhetorics of identity created in inappropriate juridical categories. These rhetorics are pre-eminently anthropomorphic. They reduce the complexity of natures/cultures hypridity by shifting discussion to debate on the criminality of their objects. In a recent piece on the attempted 'repatriation' of grey wolves, a game manager described a wolf who had killed a sheep after being released into the wild as having squandered his opportunity for rehabilitation. As a career criminal (animals get only one strike, after which all offenses are capital) this wolf was 'removed from the population.' Predictably, environmentalists responded by defending the wolves' natural instincts and their inability to distinguish 'right from wrong.' The rhetorical resources of this discussion – used equally and promiscuously by both sides – seemed to range from Call of the Wild to Discipline and Punish.

Such debates reinscribe categories of identity that have characterized nature/nurture debates about criminal characteristics in humans as well as disputes about racial and gender identities. I argue that much environmental policy is founded on these displacements, and that battles over human identity politics – often too incendiary for mainstream political discourse – are fought over the bodies of animals and spaces of habitats. Further, the conflation of these identities narratives with scientific discourse adds epistemological prestige to claims about 'inner nature' and its cultural analogs.

I have borrowed and punned on Deleuzian ideas of recapture and reterritorialization to styles of evading complexity in discourse by assigning identity, creating norms and privileging narrative resolution. These strategies are pervasive in popular culture, characterize forms of popular narratology from theology to technology. They are built into 'critical thinking' because they present the possibility of resolving complexity, reaffirming closure and allowing disputants to name themselves (to posit identity) in relation to an other unfailingly posed as hostile or uninformed.

It is this confirmation of subjective identity through naming that constitutes the hegemony buttressed value driving any discussion of this sort. What Lyotard has termed the 'differed' functions as a convenient and satisfying ground zero for political discussions – the point at which disputants agree to disagree and take satisfaction in their enmity for an unreasonable and hostile 'other.' All the while, complex beings and processes remain in action below the narrow bandwidth that public discourse makes visible: 'othered' beyond 'otherness' is what is essentially a different universe, the universe of the 'quasi-object.'

Keywords: environmentalism, narrative, quasi-objects, politics

Where Have All the Rachel Carsons Gone: Science as Literature in the 21st Century; Caffilene Allen, Georgia State University

With her first book, *The Sea Around Us*, Rachel Carson, then employed by the U.S. Fish and Wildlife Service, proved that a "science document" could also be good literature and a bestseller. As we enter the twenty-first century, we would do well to remember Carson's legacy. Technological advances have made possible information highways so overwhelming that one voice has little chance of being heard. One way for scientists to be heard is to produce the same kind of high-quality literary document that Carson produced.

This may not be as difficult as it sounds. Within the field of environmental protection alone, numerous opportunities exist for well-written, science-based documents with public appeal. One such example is the executive summary of the Southern Appalachian Assessment, an interagency ecological assessment co-led by the U.S. Forest Service and the U.S. Environmental Protection Agency. While the 100-page document is not, in its present state, a high-quality literary document, it could be. Recognizing the profound influence of culture on the natural environment, writers of the document interweave environmental with cultural information about southern Appalachia. This perspective broadens the potential appeal of the document from just those interested in scientific information to others interested in knowing more about the impact of science on the cultural milieu of Appalachia.

In addition to combining environmental with cultural information, the Southern Appalachian Assessment also combines printed texts with color maps generated through the computer-based Geographic Information System (GIS). Thus, the document offers an opportunity to re-examine and possibly expand the definition of literature to include the technological advances in communication strategies that go beyond the printed word.

Numerous documents similar to the Southern Appalachian Assessment are now being generated by writers concerned with environmental protection. With Rachel Carson's The Sea Around Us as a guide, an examination of the potential for the Southern Appalachian Assessment Executive Summary becoming a well-written scientific document with great public appeal can help science writers and others make sure that their own voice is heard amid the cacophony of information that will surely be a part of the twenty-first century.

Science and Sentiment: The Nature Fakers Controversy; Beth Donaldson, SUNY at Stony Brook

In 1903, naturalist John Burroughs published "Real and Sham Natural History" in the *Atlantic Monthly*, beginning what would later become known as the nature fakers controversy. Burroughs warned nature writers against "putting in too much sentiment, too much literature." For Burroughs, truth and literature are separate pursuits, and in wholesome nature essays, "the line between fact and fiction is never crossed." The nature fakers controversy, therefore, was in part a dispute over disciplinary boundaries and distinctions between science and literature or, in Burroughs' terms, scientific value and romantic pleasure.

Yet a parallel impulse to polarize gender differences underlies Burroughs' discussion of generic distinctions among nature essays. The division between the real and the counterfeit, fact and fiction, science and sentiment, can be easily transposed upon the categories of masculine and feminine. For example, Burroughs does not, as is commonly held, object to anthropomorphism in general in nature essays. Rather, Burroughs objects specifically to images of mothering and of familial-based education among animals. In the nature essays of many women bird watchers, authors tend to emphasize the family dynamics of particular birds. For these writers, the observation of bird families becomes an opportunity to analyze alternative kinship structures and by implication to prescribe proper parental behavior for humans. According to Burroughs, however, animals truly exist in a state of war: "they are like the people of a city in a state of siege, or like an army moving through, or encamped in, an enemy's country." Burroughs rejects the narrative of family nurturance in favor of a narrative of combat for a particular purpose.

I argue that in "Real and Sham Natural History" Burroughs' tacit project is to rescue nature writing from becoming a feminized discourse. In order to do this, Burroughs must steer natural observation away from its association with women bird watchers and, more importantly, from an association with sentimental literature and its concomitant politics. Burroughs masculinizes nature writing by appealing to the authority of Darwin and the aggressive ethic of Roosevelt's hunting stories and by simultaneously discrediting images of family dynamics and mothering in animal life-histories.

Session 7F: 18th Century Perspectives on Science and Medicine (*Piedmont Room*)

Chair: James J. Bono, SUNY - Buffalo

Lessons in Medical Communication From the Eighteenth Century; Ernelle Fife, Georgia State University

Eighteenth-century narratives depicting illness still have meaning for us. Doctors and patients had, and have, different agendas, and these agendas are reflected in their chosen discourse. Doctors wish to halt an epidemic as quickly as possible; patients want to live their lives as best they can during an epidemic. Patients continue with their lifeworld experiences gravely altered by chronic illness; doctors reduce the patient to the illness.

I examine several eighteenth-century illness narratives describing an epidemic written by doctors and patients. Those written by doctors are in what I call linear discourse. Linear discourse, also called public or masculine or scientific discourse, is objective, concise, and with relatively few literary tropes or discursive narratives. It has little metadiscourse or repetition, but contains details and numerous specifics, especially of numbers, statistics, or measurements. Linear discourse usually has a chronological organization and has clearly defined and frequently highly technical vocabulary. Narratives by patients are in circular discourse, also called private or feminine discourse, It is subjective, frequently discursive and repetitive. It lacks a clear organizational pattern, even to the point of rambling; this type of discourse may have an opaque or tangential quality. Circular discourse contains little technical or complex vocabulary, but has numerous literary tropes, and personal references or narratives. Daniel Defoe's *Journal of the Plague Year* is particularly interesting in that he combines linear and circular discourse depending on his specific agenda at that point.

The difference in the discourse of patients and doctors highlights the central problem in medical communication today. Eighteenth-century narratives could be useful for twentieth-century medical students and doctors in understanding the limitations of linear discourse and the richness and validity of circular discourse. These illness narratives have an additional advantage in that the actual illness is rarely known; this means the modern reader must focus on something other than finding the correct diagnosis or proper prognosis. All too often, doctors' discourse is suitable only for an audience of other medical care practitioners, not for the true audience of patients. Doctors must develop a language that possesses elements of circular discourse, especially the inclusion of the patients' lifeworld experiences. Then, and only then, will doctors be able to communicate essential medical information in such a way that their audience of patients can readily understand it.

Scientific Method and the Music of Human Speech in *Tristram Shandy*; Kyle S. Glover, Oklahoma State University

For Laurence Sterne, the patterns of stress and pitch of the human voice are more than simply tools or devices used to recreate conversation on the printed page; in *Tristram Shandy* they become objects of scientific analysis. Sterne carries out a series of controlled experiments on the music of speech in which he places different forms of this music into a variety of environments in order to study them. In a sense, he is like Waiter, a character in the novel who experiments upon sentences by scratching at the words with his penknife in an attempt to get at their "mystical meaning." Sterne, and we along with him, scratch at the sounds of speech in an effort to find out what those sounds are and how they function in communication. As Sterne continually reminds us, there always is a danger that we may damage communication with our scratching, just as Toby points out to Waiter that he has "marr'd a word."

In this paper, I intend to show how Sterne isolates the "musical" component of spoken language from the lexical, thereby establishing a means for studying sounds

separately from the words themselves. In much the same way, Newton used a prism to separate the component colors of sunlight for analysis, a process he describes in "A New Theory about Light and Colours" (1674) and *Optics* (1704). Sterne's experimentation is also consistent with Bacon's inductive method, his "new tool" for scientific inquiry, which Bacon sets forth in *Novum Organum* (1620). We know that Sterne was familiar with the writings of both Newton and Bacon; my paper will examine how Sterne uses the inductive methods of these scientists to experiment with the sounds of communication.

Fact, Fiction and Interpretation in Eighteenth-Century Science and Literature: The Intellectual Appeal of the Epistolary Novel; Cheryl Lambert, University of California - Riverside

The eighteenth century marks a watershed shift in Western culture. Developments in literature and in science illustrate this shift admirably: the second half of the century brings the beginning of the Romantic movement and the establishment of modem scientific method and practice. In both literature and science during this period, important changes evolve out of a heightened awareness of the role of individual perceptions in the creation of knowledge and understanding. During the second half of the century especially, science begins to take on a life of its own, as an intellectual pursuit separate from philosophy, and at the same time specialization within science begins to be more significant, as individual sciences establish fields of investigation distinct from physics, previously the basic avenue of natural science part of the establishment of natural or experimental science as a distinct discipline, rules of proper "scientific' conduct and procedure with the aim of eliminating individual bias in observation begin to be universally accepted. In literature, on the other hand, novelists push the limits of genre and play with the effects of observational perspective on the structure of their narratives.

If knowledge comes through sense perception (a notion which had become common by the middle of the eighteenth century), then it is only logical that observation of nature, the gathering of sense perceptions, must form the basis of human intellectual activity. Imitation is the usual watchword associated with eighteenth-century fine arts, but the concept of imitation does not convey the philosophical import of the newly emerged conception of the connection between the natural world and human knowledge. I suggest that observation, the watchword of science, provides another important approach to understanding motivating cultural forces in literature as well as in science. The quest for establishing unbiased facts through controlled observation in the natural sciences is only the most obvious manifestation of a broader intellectual concern with how the mind processes sense perceptions into knowledge.

The un-narrated epistolary novels that became popular all over the European continent and Britain in the mid- and late eighteenth century exhibit a sophisticated appearance of genuine historical documents. These novels combine the truth value of documents written in the first person with a frame of the author as historian/editor who has gathered the letters, primary documents in historical research. and published them for the edification of the public. The epistolary novel's frame as a collection of personal letters thus implies a "real-life' authenticity which obscures their fictional context and gives the reader the illusion of dealing with facts. Indeed, this conceit leaves the reader, in the absence of a narrator, to synthesize a narrative out of the letters. The reader thus tends herself faced with a task analogous to that of the scientist who synthesizes an interpretation (most often in narrative form) out of her observations of natural phenomena. I contend that the underlying appeal of the epistolary novel may arise in large part from this relationship to the prevailing intellectual climate of this period of Western history a period during which "scientific" became synonymous with "correct." I explore this contention by looking at works by Buffon, Diderot, Lavoisier, Goethe, and Richardson.

Keywords: eighteenth-century literature, epistolary novel, observation, interpretation, natural history, fictionality, framing, history, narrative, Richardson, Goethe, Lavoisier, Buffon, Diderot, scientific method

Reading *The Expedition of Humphrey Clinker* Through *The English Malady*; Carol Ann Wald, University of California - Los Angeles

The words "diet" and "diatribe" share more than alliteration. Their common Greek root, "dia," means "through," and this sense of movement perfectly captures the metaphoric relationship between Dr. George Cheyne's 1733 medical treatise on nervous disorders, *The English Malady*, and Tobias Smollett's 1771 novel about a valetudinarian's joruney in search of health, *The Expedition of Humphrey Clinker*.

In an age of rapid English colonial expansion and tumultuous domestic social change, Cheyne's treatise yearns to stabilize what he calls "the Animal Oeconomy." His popular work offered a comprehensive somatic explanation for the upper class English complaints variously called vapours, the spleen, hypochondria, or simply the "hypp."

The healthy body, according to Cheyne's scheme, was an equilibrium between solids and liquids. A balance between consumption and excretion maintained this equilibrium. All nervous disorders, he believed, from ennui to melancholy to fatal apoplexies, stemmed from the high living of the leisured classes, particularly in over-consumption of the foreign delicacies pouring into England from the new colonies.

The English "constitution" was, in his view, literally being invaded from within. The foreign "invaders," therefore, had to be expelled--through vomiting, purging, bleeding and other secretions.

In *The Expedition of Humphrey Clinker*, gentleman landowner Matthew Bramble seeks relief from "the hypp" in a progress through late eighteenth century England. Using *The English Malady's* model of the nervous body, this paper explores four of Bramble's letters to his friend and retainer, Dr. Lewis, written from Bath and London. These letters unite anxieties about sickness with fears about the loss of social distinctions occuring under the pressure of New World wealth. Each of the letters in this sequence plays out variations on the Cheynian therapeutic themes of consumption, fluid build-up, and assimilation or expulsion of poisonous foreign excesses. As various rhetorical tactics block expulsion, the swelling tension climaxes in London, where Bramble finally speaks and acts to assimilate, quell and expel some of the social confusion in his own household, and, by extension, in England.

Saturday, October 12, 11:30 - 1:30 pm: Luncheon and Business Meeting (*Ballroom*)

(Included in registration fee) All are strongly encouraged to attend.

Saturday, October 12, 1:30 - 3:00 pm: Session 8

Session 8A: *Fin De Siecle* Europe and Science (*Ansley Room*)

Chair: Robert E. Wood, Georgia Institute of Technology

Training the Gaze: Max Nordau's "Psycho-physiological Criticism" and *The Picture of Dorian Gray*; M. Kellen Williams, Kennesaw State College

"To reveal art and conceal the artist is art's aim"--or so says the "Preface" to Oscar Wilde's *The Picture of Dorian Gray*. But as the artist who paints that picture complains, "We live in an age when men treat art as if it were a form of autobiography"--a procedure given scientific validity by what a number of late-19th century scientists and social critics argued was a visible, empirically demonstrable link between fin-de-siécle art and the degenerate pathology of its creators. The most avid theoretician of this connection by far was Max Nordau, who, following the lead of his mentor Caesar Lombroso, sought to establish a "scientific form of criticism" based not "upon the purely accidental, capricious and variable emotions [art] awakens . . . but upon the psycho-physiological elements from which it sprang," the "mental stigmata" of degeneracy and hysteria Nordau found embodied in certain tell-tale stylistic and technical features of the 'degenerate' artwork. Beneath the pressure of Nordau's "psycho-physiological" criticism, the artistic corpus is transformed into body that, much like Dorian's portrait, literally takes the place of the subject's own, making it, as Nordau insisted, "not necessary to measure the cranium of an author, or to see the lobe of a painter's ear, in order to recognize that he belongs to the class of degenerates." The parallels between Nordau's positivist dream and the grisly autonomy of Dorian's portrait are striking: bearing as it does the graphic traces of Dorian's criminal desires, the painting not only resembles the sort of vivid record Nordau adduced in support of his equation between degenerate art forms and the pathology of their creators, it also stands as the aesthetic counterpart to such late-19th century icons of deviance as Lombroso's "Faces of Criminality," Francis Galton's criminal composites, or Charcot's famous *Iconographie photographique de la Salpêtrière*.

My essay situates the plot and polemic of *The Picture of Dorian Gray* within the context afforded by Nordau's "psycho-physiological " criticism, late-19th century crititical discourse on decadence and degeneration, and the technologies of viewing both endorse. Like the critical response to decadent art, Nordau's "psycho-physiological" criticism, I suggest, is both the product of and an attempt to counter contemporary anxieties about looking that were associated with the dangerously seductive spectacle of fin-de-siècle art, a danger Nordau and other conservative critics evoked through an "irresistible passion for imitation" that gripped the late-19th century public and "degenerate" alike, a pathological mimicry that led them to "mold themselves," in Nordau's words, "after some artistic pattern which has no affinity with their nature." Decadent art, these critics warned, was dangerous because looking at it prompted the desire to look like it--the very gaze through which *The Picture of Dorian Gray* works to disrupt the relations between spectacle and spectator, art and desire, sign and referent, that Nordau's criticism sought to maintain.

The Power of the Feminine Milieu in Zola's *Nana*; Catherine Bordeau, Languages and Literature Division Lyon College

Zola's naturalism testifies strikingly to the importance of science for French literature in the nineteenth century. His theory of the experimental novel develops an analogy between the author and the scientist: he claims to situate his characters in a certain milieu in order to study the resulting transformations. Theories of the milieu dominate French thought in the nineteenth century, as seen particularly in Jean-Baptiste Lamarck, Hippolyte Taine and Claude Bernard. I want to argue that Zola's novels are significant in articulating the importance of such belief in environmental influence for conceptions of men's and women's power.

Naturalist writings in the nineteenth century often personify nature as a female deity. The prestige of science in this period entails the prominence of nature as a model of feminine power, often conceived as environmental influence. Such materialism also tends to question or undermine the status of God as an image of the creator. Zola's novel *Nana*. (1880) evokes the consequences of this shift in the status of nature and God for male and female power.

Nana tells the story of a prostitute who rises from the slums of Paris to dominate her rich and powerful lovers, ruining them as they become obsessed with her. Nana achieves this power to a great extent through the seductive force of her natural scent. Zola thus alludes to contemporary theories of women's odors as an "atmosphere," that is, as an environment in which men's instincts are no longer controlled by reason. The feminine milieu overpowers the individual autonomy typically attributed to men.

Zola condemns Nana's power, suggesting that woman's domination of man is an unnatural order. At the same time, he describes her rise from the slums as nature's revenge against the rich. The power of Nana is thus linked to that of nature. While Zola criticizes Nana's empire, he promotes a view of nature as a powerful female deity and confirms the milieu as the primary source of social transformation. He is in the position of perpetuating a shift in the dominant model of power from masculine autonomy to feminine influence, while condemning the implications of this shift for the status of men and women.

It is as a "scientist" that Zola develops theories of the milieu. He describes this role as a privileged position from which man may eventually control nature and reclaim his God-like autonomy. However, the collapse of male power in *Nana* suggests that naturalism also threatens the gender hierarchy in which man rules over woman as God rules over nature.

"A Piece of Protoplasm": T. H. Huxley's Influence on Jack London; Ian F. Roberts, Missouri Western State College

I argue that Jack London's short story, "A Piece of Steak," relies heavily on the biological concept of "protoplasm," as articulated in T. H. Huxley's essay "On the Physical Basis of Life." My paper discusses striking similarities between London's short story about an aging boxer, as well as his newspaper reports on boxing, and Huxley's sensational essay on the underlying continuity of all life.

London repeatedly expressed his admiration for Thomas Huxley, yet there remains little analysis of London's use of Huxley's ideas. Perhaps the most important of these ideas for London was the concept of protoplasm and its role in supporting life. Tom King, the protagonist of London's story, loses an important boxing match, in part, for want of proper food--a piece of steak, in particular. Similarly, Huxley's essay emphasizes the importance of consuming the protoplasm of other creatures in order to sustain life and vigor.

Indeed, a close reading of Huxley's essay and London's short story makes it apparent that London not only integrated Huxley's concept of protoplasm into his naturalistic philosophy, but that London had this concept firmly in mind when writing this story and his boxing articles. Moreover, when read in light of Huxley's essay, the theme and symbolism of "A Piece of Steak" take on new and suprising significance.

"The Advancing Tide of Matter Threatens to Drown Their Souls": T. H. Huxley and Thomas Hardy; Jennifer Ruth, Brown University

In *The Tremulous Private Body* Francis Barker claims that in the seventeenth century a privileged and immaterial consciousness ("personhood") develops by repressing materiality, turning the body into the mind's embarrassing subordinate. But the body takes its revenge in the mid-nineteenth century. For the mid-to-late Victorian, the body only appears to answer to consciousness when, like the slaves in Melville's *Benito Cereno*, it may be doing the dictating: "Tis 'I", compact of nerve, muscle, gland, and bone," Victorian psychologist Henry Maudsley wrote, "who choose to resolve to do or not to do on each occasion, not any part or detached principle or sublimed essence of me"

(*Body and Will*, 1878). Rather than transcendent rationality or teleological Spirit, then, mid-to-late Victorians ponder Helmholtz's thermodynamics which "completely upset the rigid separation between beings and things, between the chemistry of the living and laboratory chemistry" (Jacob, *The Logic of Life*).

Recognizing a shift, scholars often divide the nineteenth century into optimism and fatalism-into an era in which man, as the quintessential subject, sees no limit to his potential and one in which he, a mere object now, dwindles to an inconsequential blip in a cosmic scheme. But this exaggerated narrative-as if people in the first half of the century built sand castles for people in the latter half to trample-obscures the subtle movement of Victorian thought. True, from 1860 to the end of the century, scientific and literary discourse question the difference between an allegedly immaterial consciousness and its very corporeal surroundings (often, as with Maudsley, doing so by collapsing the subject into a meticulously detailed and specularized body). But it is not so much that the latter half answers the first half of the century by turning its subject into an object. It is more that the latter part of the century struggles to place the essential (Spirit) and the inessential (material) on a continuum-whether that continuum reduces both to the mundane and the material or finds some other fragile balance, some other mode of merging the transcendent and the concrete. In my paper, I discuss two Victorian figures accused, both by their contemporaries and ours, of callously dissolving personhood into materialism: Thomas Henry Huxley and Thomas Hardy. I argue that, like their naturalist counterparts in other Western countries (Nordau, Zola), these writers negotiate the material limits of the subject; but, unlike their foreign peers, the British want to explore the extent to which the subject may be seen as an object without finally becoming one.

Keywords: nineteenth-century materialism, naturalism, the body

Session 8B: Virtual Bodies: New Sciences (*Ardmore Room*)

Chair: Terry Harpold, Georgia Institute of Technology

Death Scenes: VR, Nanotechnology, and My Mother's Bedroom; Ann Weinstone, Stanford University

A resurrection is taking place. Numerous recent novels, such as Kathleen Anne Goonan's *Queen City Jazz* and Ian MacDonald's *Terminal Cafe*, share a common *novum*, nanotechnology, and a common theme: the endless mutability and survivability of the human body. Their authors present the reader not with a digitized, virtual body, but with a fleshly body, and even in some cases a planet, that has been completely remastered by a technology of post-vital codonics. The ultimate demonstration of this generally ecstatic colonization of nature by culture is the iteration of death scenes in which for love, money, knowledge, or sexual thrill, characters die and are resurrected in altered, but always more powerful, physical forms.

From novels, to scholarly works, to scientific texts, narratives of nanotechnology gather cultural force through rhetorics of the creation of an invincible body and a view of "humanity" as overlords of a planet that has now become as malleable and re-markable as a three- dimensional palimpsest. On the face of it, this state of affairs appears to represent a breakaway from the rhetorics of virtual reality (VR). In VR narratives, the human body, more particularly the Western male body, appears as a fragile, threatened, and ultimately despised appendage. And indeed, cyberspace has been dubbed a "secessionist paraspace," and "our last shelter." Furthermore, in books such as Greg Egan's *Permutation City*, mortality anxieties contaminate not only the physical body, but the digitized body as well. There is no safety, no sure promise of resurrection. The fallible physical world and its machines haunt the ghosts.

In my talk I will juxtapose three technologically-assisted death scenes in order to investigate what such scenes have to tell us about current cultural fantasies of bodies and technology. These are death scenes in nanotechnology texts, including scholarly and scientific works; death scenes in VR narratives; and the scene of my mother's death, an assisted suicide following a long bout with cancer. I will ask questions such as whose bodies are at issue in these scenes. What are the cultural and intertextual links between the fictive and scientific narratives and a death via assisted suicide? What has changed or hasn't moving from VR to nanotechnology? And can we begin to locate some historical pretexts for such changes? Particularly, I want to position predications of treacherous bodies (VR) and mastered bodies (nanotech) as products, in part, of changing attitudes about Big Science between the immediate post-war period and now.

Keywords: virtual reality; nanotechnology; the body; 20th century technology; science fiction; death and dying.

Interactivity, Immersion, and Proprioceptive Hallucination: Theorizing the Limitations of Virtual Technologies; Robert Markley, West Virginia University

In the past decade, "cyberspace" and "Virtual Reality" have become catch-all terms to describe carious kinds of electronically mediated experience. Although the conceptual sloppiness of these terms is readily apparent, few critics of cuberculture have been able to theorize the limitations of what I shall call virtual technologies form within the scientific discourses that have brought then into being. In this paper, I want to begin to untangle the confusion among three often conflated concepts: interactivity, immersion, and what I call proprioceptive hallucination--the re-creation of a computer generated world as "real" as the material world we inhabit. More specifically, I what to distinguish between immersive technologies--the mainstay of arcades such as Virtual World, a chain with outlets in Los Angeles, Chicago, New York, Seattle, and elsewhere--and proprioceptive hallucination, an always approximate rendition of embodied experience that then can be employed

selectively (as in the case of agoraphobia) to modify physical and psychological behavior. After a quick description of a Virtual World battle simulation, I shall investigate the recent experimental results of Cris Byrne, who immersed several groups of Seattle high school students in Virtual Chemistry World, then tested them to determine whether their experience in a virtual environment aided their understanding and retention of some basic molecular concepts. Her findings suggest that virtual technologies are less successful than interactive media in teaching some aspects of high school chemistry (the process of building atoms and molecules transferred to a computer program); the differences between her experiments and those conducted by psychiatrists at Kaiser Permanente in San Francisco, which report up to a 90% success rate in curing people who suffer from agoraphobia, reflect crucial distinctions between immersive and proprioceptince hallucinatory technologies: neither , however, transcends a fundamental abstraction rooted in the mathematics of number crunching. By recognizing this distinction, political function in theorizing the limitations of virtual technologies and promoting decentralized research programs designed to emphasize proprioceptive hallucination as an emerging civil right for the differently abled.

Session 8C: Cultural Studies of Technoscience (*Brookwood Room*)

Chair: Anne Balsamo, Georgia Institute of Technology

Intelligent Agency; J. Macgregor Wise, Clemson University

This paper addresses the figure of the Intelligent Agent in recent discourses around cyberspace. This figure, actually a software program tailored to an individual's needs and personality, would act in that individual's place in cyberspace (i.e., buying tickets, negotiating meetings, database searching, all while one was occupied with other matters); as such the figure appeals to a long tradition of labor-saving technologies. The intelligent agent figure is making numerous appearances throughout discourses on cyberspace: articles in Wired magazine, treatments in both Nicholas Negroponte's *Being Digital* and William Mitchell's *City of Bits*, and an appearance in AT&T's promotional video *Connections*, not to mention the critical volume *Resisting the Virtual Life*. Few, if any, mentions of the intelligent agent are critical of the concept (even the latter case), and it seems a well-accepted (and expected) figure in visions of our wired future.

The purpose of this paper is to explore the nature of agency in cyberspace by critically discussing the function of an intelligent agent. I argue that rather than presenting a radical personal freedom (the agent allowing one the ability to accomplish almost anything), the figure acts as a mediator between a structured cyberspace and the individual. To an extent, agents are always double agents. My purpose here is not to debunk or reject Intelligent Agents (this is not a technophobia), rather it is to set the ground to critically explore what this figure--this function--allows and disallows. The figure presents a salient point from which to address the politics and social forces at work on/in cyberspace and the shifting notion of agency that this new technological assemblage (a new social space) provides.

IMAX Cinema and the Tourist Gaze; Charles Acland, Queens University

Abstract not available

HIV/AIDS in Southeast Asia: An Anti-orientalist Critique; John Nguyet Erni, University of New Hampshire

This essay discusses the HIV/AIDS pandemic in Southeast Asia and the neo-colonial forms of medical and media information and of tourism, focusing on Thailand as a case study. Drawing on postcolonial theory, international feminism, and theories of cultural geography in cultural studies, I explore how global vectors of media information, transnational biomedicine, and tourism generate a certain Orientalist conception of Thai sexuality and gender as part of the historical frame of "Asian modernity" and examine the relationship between such conceptions and the AIDS crisis currently gripping Thailand and many other Southeast Asian countries.

On Nature Writing; Jennifer Daryl Slack, Michigan Technological University

Abstract not available

Session 8D: Science and Opera (*Fulton Room*)

Chair: Sandra Corse, Georgia Institute of Technology

Electronic Gender-Bending in the film *Farinelli*; Felicia Miller Frank

A spate of plays and films that provoke the troubling figure of a sexually ambiguous character, *Victor\Victoria*, *The Crying Game*, *M. Butterfly* and most recently, *Farinelli*, reflect a centuries' old cultural preoccupation with gender, its truths and deceptions. My discussion focuses on the musical traditions that subtend the electronically-produced castrate voice in *Farinelli* Its hermaphroditic voice was produced by an electronic manipulation that effected an audial "morphing," a fusion of recorded male and female vocal elements. This electronic hermaphrodite attests to a long musical tradition of travesty and gender-blurring, and to a fascination with the hermaphrodite in the nineteenth-century. The musical hermaphrodite figures intriguingly current interrogations of gender categories. Elsewhere I have analyzed literary texts that reproduce the construction of the soprano voice in *bel canto* nineteenth-century opera, following Michel Poizat' s reading of opera in the context of the castrate voice, its historic role as the angelic voice and its reception as "inhuman" and *hors-sexe*, and have pointed out the irony of importing of Italian and German operatic styles as supports for the national self-image which as Jane Fulcher shows, the Paris Opera productions sought to create.

The film *Farinelli*, itself a mediocre story with a retrograde sexual politics, merits interest for the musical and cultural antecedents it recapitulates. I begin my essay with a discussion of Nadar's "crotch shot" of a hermaphrodite, displayed as part of a recent exhibition of Nadar's mid-century photographic studies. The figure of the hermaphrodite provides the focus of Foucault's piece, "Le Vrai sexe," originally published as the introduction to *Herculine Barbin, dite Alexina B.*. For Foucault, the nineteenth-century gaze of medicine and photography, with their claims to objectivity, sought to fix a singular truth in sex, while sex became the key to the truth of identity itself. Foucault notes that the eighteenth-century taste for travesty becomes, in the 19th century a preoccupation with the hermaphrodite. In his article "Le sexe ni vrai, ni faux, ou Hermaphrodite saisi par le neutre" Louis Marin demonstrates through an etymological analysis of the word "hermaphrodite" the impossibility of thinking the neuter. What is produced instead is a shimmering of difference and doubled negativity, with Hermes unstably grafted onto Aphrodite "l'espace d'in-finité du zéro non-nommable, du "ni vrai ni faux," à la condition de sans cesse le déplacer dans les dispositifs des représentations de la différence--sexuelle," The power of the contralto voice lies perhaps in its enactment of the drama of alterity and instability characteristic of gender identification generally, not just that of the impossible neuter.

Théophile Gautier's poem "Contralto" articulates the troubled fascination with gender ambiguity which he explores elsewhere in *Mlle. Maupin*. The operatic roles he praises in the contralto, "hermaphrodite de la voix," such as Tancredi, Romeo, Arsace, and so on comprised the typical repertory of the singer Pauline Viardot. She is a central figure in a musical filiation that links Porpora to Farinelli, to her father, Mañuel García, to the contralto, Marilyn Home, who sang many of the same roles as both Farinelli and Viardot. Viardot's extraordinary range, and the quality of her voice, combining "tenor and soprano, cello and piano" made any role possible for her. Because of her husband's left politics and other cabals, however, the Paris Opera was not open to her, and she made her career primarily abroad, returning home for brief rests.

With the events of 1848, however, Viardot returned to the Paris Opera, renamed "Le Thèâtre de la Nation." Her cantata, *La jeune République* was performed by a tenor and a chorus of fifty young girls dressed in white with tricolored sashes. She created Fidès in *Le Prophète*, a role written for her by Meyerbeer, Sapho in Gounod's opera, written entirely for her. The next year, she had an important triumph in the lead role in a revival of Gluck's Orfeo. The return of classical tastes and themes may be associated with the republican aspirations then in efflorescence. A portrait of her from 1860 shows her "in drag" as Orfeo, a laurel wreath on her brow, in a Greek

toga that bared her arms, plucking a lyre. The opera was one of Gluck's "reform" pieces, with a reduction of the vocal *fiorituri* that had made Farinelli famous.

While the film takes wild liberties with real events and in its depiction of Farninelli's character and sexual behavior, its mise-en-scène vividly communicates the impression of artifice associated with the castrato's "birdlike" voice through its staging of him against a theater backdrop that exploits bird imagery: bird headdresses set off his exotic voice, a peacock prop spreads its wings, a dove flies from his hands. Its flat-footed melodrama yet preserves the London rivalry between Porpora's highly ornamented style and Handel's restrained, yet emotionally rich music. The film thus shows Farinelli turn from music by his brother and Porpora to sing an air from Handel's *Rinaldo*.

Patrick Barbier, in his new biography of Farinelli notes the choice Gluck made of singers marked a shift in the history of the castrate: Guadagni whom Gluck chose for Orfeo was a centralist, not the earlier bravura sopranist of type Farinelli typified . The "suave" quality Gluck sought in Guadagni's voice may be seen as comparable to the quality Viard was able to supply to the role. She is thus a kind of bridge in opera styles. Viardot herself first sang Rossini's music, but she evolved with the times, and sang for Meyerbeer, Berlioz, Gounod, even Brahms. She was also associated with the revival of "antique Italian song," and sang Handel in recital. She sang airs from *Rinaldo* at a performance given in honor of Queen Victoria in Coblentz, where her rival, Jenny Lind, also performed. Gluck' s Orpheus mourns his lost wife in a thrice repeated lament in the opera's bravura piece. Thus the archetype of the élan of song, in his central moment of sexual loss, was embodied for mid-19th-century audiences by a woman singer, in a role created in the 18th century for a castrate. This is a subject position available to a surprising number of candidates.

The "Essence" of Opera: John Cage's *Europera 5* and Heideggerian Revealing; Sandra Corse, Georgia Institute of Technology

John Cage's compositional method in his last opera, *Europera 5* (1991), enlists technological means (phonograph, radio, and prepared tape) in order to undermine technology's instrumentality in a manner congruent with Heidegger's "question" concerning technology. By creating his opera from fragments of historical operas, opera recordings, and piano transcriptions of operatic arias, Cage invokes the history of opera and creates an extended critique of opera's traditional poses; *Europera 5* enacts Heideggerian enframing by revealing that opera, like nature, becomes a standing reserve useful only in the production of new opera. Cage's pastiche demonstrates nothing more than its own process, thereby exposing the fundamental circularity of autonomous art; what art reveals is its own desire to "be" art. Yet it is the nature of such a revelation, as Cage's adherence to chance suggests, to propose that formalism lies not where Kant placed it, in subjective response to a structurally comprehensible universe, but in its own will to create itself as "standing reserve" for itself. Thus Cage rehearses Heidegger's critique of the subject as the thing that "sees," that stands opposite the object. Rather, like Heidegger, Cage asks us to listen and constructs opera as the site in which listening opens subjectivity beyond instrumentality and the eye's objectification of the world.

Intimate Enemies: The Figures of Tycho Brahe and Johannes Kepler in Henrik Bjelke's *Tycho* and John Banville's *Kepler*; John Greenway, University of Kentucky

These two literary treatments of scientific history recreate imaginatively the personal tensions in the formation of modern science. Bjelke's opera created a mild sensation in Denmark in 1987, in part for nationalistic reasons: it's difficult to imagine an opera about Kierkegaard. Bjelke picked the form following W. H. Auden's glum observation that the irony conditioning modern writing no longer tolerates any high style. Kepler here emerges as the spiritual outsider, even more than the literal refugee Brahe. In the opera, Brahe sees Kepler as a collaborative creator in the new Copernican revolution, seeking a disciple in his younger colleague, his first and only friend in shared genius. Kepler, however, realizes that they will have to respect each other by becoming

enemies. He realizes he needs Tycho, but must ultimately reject him. In seeing Kepler as the emotional outsider, Bjelke has an acknowledged source in Kafka's editor Max Bred and his novel *Tycho Brahes Weg zur Gott* (1931).

Banville (1981) draws his view of the dynamics of science from Koestler's *The Sleepwalkers*. This literary Kepler appears as the one who achieved modern science by letting observation determine explanation. Brahe, the hero to Bjelke, appears here as a hesitant voice conditioned by the obsolete, while Banville uses interior monologue to recreate not only Kepler's insight into the elliptical nature of planetary orbits, but the stunning consequences of this realization for the scientific human imagination.

Session 8E: Body Knowledges: Anatomies of Female Experience (*Georgia Room*)

Organizer: Bernice Hausman, Virginia Polytechnic Institute and State University

"Body Knowledges: Anatomies of Female Experience" examines the production of knowledge about female bodies in medicine and literature. Our purpose is to suggest diverse ways for scholars to read representations of female bodies in these discourses. We are particularly interested in suggesting methods of subverting dominant modes of representation that degrade or dismiss the female body as insignificant, abnormal, or incapable of self-realization. Each of the papers in the panel represents one possible method of addressing a textualization of female bodily experience.

Nancy Cervetti's examination of the famous engravings of William Hunter's The Human Gravid Uterus asks us to interpret the visual paradigm established in this 1774 medical treatise. In these representations, the female body becomes a mutilated appendage to the fetus it encases. Cervetti suggests how these images helped to create a paradigmatic medical attitute toward the pregnant female body through their dissemination in 19th-century textbooks. This paper offers a critique of medical representations of the female body and suggests how medical illustrations can transmit an ideological message through imagery and tone.

Bernice Hausman's analysis of Elizabeth von Arnim's The Pastor's Wife (1914) details the devastating effects of one woman's ignorance of her body. This ignorance is set against a conflict between medicine ("science") and midwifery ("folk practices") concerning methods of childbirth (drugged or "natural") and breastfeeding. In the novel's satiric portrayal, both the doctor and the midwife are subject to ridicule; neither provides the protagonist with knowledges that empower her, although the doctor does provide her with a way to exist in ignorance. Hausman shows that reading the novel as a comment on women's relationships to these embodied experiences demonstrates the crucial importance of the informal circulation of bodily knowledges between women.

Shoshana Milgram's discussion of Mary MacLane's autobiography (1901) addresses that text's exuberant female body. MacLane believed herself to be author to herself; in this radical self-realization, she authorized a knowledge about her body unavailable to most women of her time. Milgram examines MacLane's "bodily self-invention" and considers the factors that allowed MacLane to produce an embodied and empowered identity. This paper provides an important counter-discourse to the ones examined by Cervetti and Hausman. By reading Mary MacLane's liver, Milgram is able to consider how women might realize a subversive re-production of female anatomy.

The Legacy of William Hunter's *Human Gravid Uterus*; Nancy Cervetti, Avila College

In 1750 a woman died suddenly at the end of her ninth month of pregnancy. Her body became the first of thirteen pregnant bodies dissected in the preparation of William Hunter's *The Anatomy of the Human Gravid Uterus*. Jan Van Rymsdyk, the principal artist, three other artists, and at least sixteen engravers were employed before the costly work was finally published twenty-five years later in 1774. *The Human Gravid Uterus*, used widely as an anatomy textbook throughout the nineteenth century, has often been praised as one of the great artistic achievements in medicine.

In the Preface, Hunter writes that the art of engraving supplies a "universal language": "it conveys clearer ideas of most natural objects, than words can express; makes stronger impressions upon the mind; and to every person conversant with the subject, gives an immediate comprehension of what it represents." For Hunter, seeing was knowing. However, rather than a simple and self-evident relation between object and illustration, Hunter's images of the female body--some of them resembling "chunks of meat"--suggest expendability and violation. As L. J.

Jordanova notes, there is an obvious contrast between the female body and fetus, with the latter treated tenderly while the former appears unnecessarily mutilated.

The presentation includes slides of eight of the thirty-four illustrations in the Human Gravid Uterus, also including, by way of contrast, slides from the obstetrical atlases of William Smellie (1754) and Charles Jenty (1761). Smellie, Jenty, and Hunter all planned publications on the gravid uterus within the space of a few years. Because they used the same artist, the differences in tone and treatment among their illustrations intensifies the significance of Hunter's choices. The presentation suggests ways the imagery and tone of the Human Gravid Uterus are translated and textualized in nineteenth-century medical books and journals, becoming and remaining the dominant paradigm in medical education until World War I.

Keywords: female bodies, medicine, medical textbooks, feminism, Hunter, uterus, anatomy

'So that I don't know about anything': Ignorance and its Consequences in Elizabeth von Arnim's *The Pastor's Wife*; Bernice Hausman, Virginia Polytechnic Institute and State University

In Elizabeth von Arnim's 1914 novel, *The Pastor's Wife*, the English protagonist goes to live in Kökensee, East Prussia with her husband, a pastor passionately interested in fertilizer. Ingeborg, the pastor's wife, is the daughter of a bishop and has been brought up in the exquisite ignorance of her body expected of women of her class. Thus, while she is passionate about the natural world and loves to tramp around the countryside, she knows next to nothing about pregnancy, childbirth, and breastfeeding--the mainstays of life for the women of Kökensee.

Ingeborg's ignorance is so profound, however, that she is completely unaware of how much she does not know. The women of the village are also unable to comprehend her total lack of knowledge about having and caring for infants--for them, surrounded by relatives and neighbors in various stages of motherhood, such knowledge is routine. This paper addresses the effect of this radical ignorance on Ingeborg's mothering practices.

In a fascinating scene, a doctor and a midwife disagree over the cause of a breast infection. Their disagreement is one instance of an opposition between "science" and "nature" that works throughout the text. The author satirizes both positions, and she suggests that breastfeeding is a learned (rather than a natural) practice by representing Ingeborg's inability to breastfeed as an affront to her husband's beliefs about maternal instinct and family life. The author's presentation of the protagonist's difficulties demonstrates that it is only through the intimate and local circulation of knowledge about female bodily experiences that women can experience them as "natural."

The Pastor's Wife is a largely autobiographical novel, and this analysis will benefit from a reading of von Arnim's true autobiography, *All the Dogs of My Life*. Significantly, von Arnim gave birth to her first two children in Prussia, but her subsequent births occurred in London and were attended by her brother, gynecologist to Queen Victoria. This perhaps explains Ingeborg's request for chloroform during labor (a request denied by the pastor, who claimed it to be "unnatural"). Yet Ingeborg's desire "not to know about anything" is indicative of more than the author's own experiences; it suggests that medical science depends on women's ignorance of their own bodily processes. Conversely, it is only through traditional disseminations of knowledge between women that the "natural" practices of motherhood can be sustained over generations.

"A dangerous thing to have within you": Mary MacLane's Liver and a Woman's Bodily Self-Invention; Shoshana Milgram, Virginia Polytechnic Institute and State University

The Story of Mary MacLane (1901) is a passionately self-celebrating confessional autobiography, written by a nineteen-year-old young woman in and of Butte, Montana. Her extraordinary career ultimately encompassed New York journalism, a Hollywood film, the friendship of Harriet Monroe,

and the respect of H. L. Mencken, Edith Wharton, D. H. Lawrence, and Gertrude Stein. Why did a writer with no subject outside herself become an immediate and enduring sensation?

Part of her appeal, to be sure, was the apparent disparity between innocence and experience, between the apparent blank of her romantic history and the exuberant blaze of her romantic imagination. More unusual and more compelling than the mystery of her creative inspiration, however, was the audacious choice of subject matter. If Mary MacLane was far from the first to record physical and emotional sensations, or to describe her appearance, she may well be the first to chronicle--in detail--the eating of a batch of fudge or a single olive, and to pay tribute not only to her face, her hair, and her legs, but also to her blood, liver, stomach, lungs, heart, nerves, and intestines.

Why would a writer tells us that her "sound, sensitive liver rests gently with its thin yellow bile in sweet content," or that her "very intestine even basks contentedly in its place like a snake in the hot dust, vibrating with conscious life"? What is the point of crediting an organ with consciousness, or of asking a reader to picture a body part one ordinarily takes for granted? To begin with, MacLane is claiming as her own not only the culturally sanctioned markers of identity, but those that are, in fact, essential and fundamental. In endowing her lungs and blood with emotions, she claims the totality of herself: she is living not only with the spirit or in the flesh, but as an integrated whole that defies any sort of mind/body dichotomy.

Her experience, she maintains, could be paradigmatic. "The world would be many-colored and mobile and passionate and nervous and high-strung and intensely alive and poetic and romantic and philosophical and egotistic and pathetic, and oh, racked to the verge of madness with the spirit of unrest--if the world had a liver like mine. . . . . My liver is fine and perfect, but sensitive, and, well--it's a dangerous thing to have within you." MacLane's approach to her body not only displays her celebration of self, but hints at future attractions. If a liver is "the foundation of the curious castle of my existence," imagine the glowing power of the castle built on that foundation.

Session 8F: Disease and Literature II: Social and Cultural Perspectives (*Piedmont Room*)

Chair: Daryl S. Ogden, Georgia Institute of Technology
Organizer: Lori Wagner, Lehigh University

Scépticos and _locos_: Feijoo and Torres on Knowledge of Disease; Rebecca Haidt, Ohio State University

At the beginning of the Eighteenth Century in Spain, ideas about the role of medicine in the treatment of disease were published and disseminated competitively by both doctors and laymen. Benito Jerónimo Feijoo and Diego de Torres Villarroel are good examples of the latter category of medical thinker: both were basically autodidacts in the subject, writing widely on medicine and entering debates over medicine's role in society. But the two writers differ radically in their ideas about society's understanding of disease. Through his essays in the *Teatro crítico universal* (1726-1740) and *Cartas eruditas* (1742-1760), Feijoo put into practice his belief that dissemination of changing ideas about disease and public debate over medicine's efficacy were integral to a larger Enlightenment project of teaching readers to question and think rationally about their bodies and their lives. Torres held that the public needs moral and spiritual-- as opposed to medical-- approaches to the understanding of disease. In his *Los desahuciados del mundo y de la gloria* (1736) and *Vida natural y católica* (1743) Torres instructs readers that moral decay is the root of disease and attacks medicine as useless in the face of mortality. The two writers represent two of the main currents of contemporary debate over medicine and disease: Feijoo is a proponent of enlightened skepticism, holding that traditional teachings on disease must be doubted by both practitioners and patients so that new approaches might reveal new knowledge of illness; Torres is a conservative moralist, finding sceptical experimentation crazy when compared with the superiority of divine control over the body and society.

The Aesthetics of Medical Obsession: Thomas Mann's *The Magic Mountain* Reconsidered; Thomas L. Buckley, Saint Joseph's University

The purpose of this study is to explore the historical context of the medical theme in Thomas Mann's novel The Magic Mountain (first Published in Germany in 1924). An historical investigation of the novel uncovers the 'location' of the medical theme at the nexus of two rather disparate historical developments: 1) the evolution of a very positive perception of the natural and medical sciences; and 2) the historical proclivity towards a mostly positive mythicization of illness, in this case of tuberculosis. Both these trends are outlined first before turning to the novel itself.

The marked preoccupation with science and medicine in the novel reveals itself through the essayistic inclusion of aestheticized scientific and medical language on a variety of topics (biology, physiology, etc.). The presence of such passages reflects a recognition of the natural and medical sciences as a pre-eminent contemporary force, even in the literary realm. The portrayal of tuberculosis, especially as embodied in the figure of the protagonist, Hans Castorp, comprises the positive mythicization of illness. Hans is the totally diseased individual who, by means of illness, experiences an intensification of consciousness, both spiritual and physical.

On an even more fundamental level, the novel represents, on the one hand, the culmination of the mythicizing literature on tuberculosis and on the other hand, the beginning of medical science's utilization of technology as the sole means of communicating with their patients and their patients' bodies. Thus, the novel's medical theme is situated, historically speaking, at a significant crossroads in medical science history.

Designing A Museum Exhibit on AIDS; Roberta Cooks, The Franklin Institute

As a physician, writer and exhibit designer I will speak about the development of What About AIDS?, an exhibit on AIDS which is now traveling around the country and has already been seen by several million people across the United States. Traditionally, science museums have steered clear of subjects like AIDS, which are related to public health and other social and ethical problems of medicine and technology. However, many science museums are rethinking their role in educating society about the difficult issues of our times.

What About AIDS? deals with the science, the public health issues and the personal and social consequences of AIDS. It contains interactive exhibits, molecular models, computer programs, personal stories, and places for visitors to express their thoughts and feelings. The exhibition tackles sensitive, tough issues, such as illness, sex, substance abuse and death - subjects which are not usually part of a science museum exhibition.

In many ways a museum is a natural place to deal with a subject like AIDS. Families come to museums to learn together, and to begin on-going discussions about topics on display. By approaching AIDS through science, science museums can fulfill their mission to provide science education, while also , in a non-threatening way, tackling other, more sensitive issues related to AIDS.

Saturday, October 12, 3:15 - 4:45 pm: Session 9

Session 9A: Henry James and Realism (*Ansley Room*)

Chair: Patrick O'Kelley, Princeton University

Despondencies of the Patient: Resistant Strains to 19th Century Medicine in Hawthorne and Henry James; Mary Esteve, University of Washington

In her 1842 *Lectures to Ladies on Anatomy and Physiology*, Mary Cove (Nichols) quotes the Philadelphian doctor Francis Condie who deems it "proper to lay down a definition of tone-which is that state of the nervous system, when it responds with sufficient promptitude, vigor and regularity, to the healthful and natural stimuli." In this same extract Condie goes on to describe two kinds of "want of tone," namely "deficient excitability," leading to "a state of torpor," and an "excess of excitability" (211). Such wants in tone were thought to carry moral consequences, because, as Cove quotes Condie further, "Every physiological propensity, appetite or passion, is implanted in the human organism by its Almighty Author, for a wise purpose, and hence...[proper indulgence is] necessary for the well being of the individual, and for the preservation of the species....[and] the power to do good" (214). Cove and Condie thus register a pervasive middle-class obsession: to cure and be cured. Restoring and maintaining tonic equilibrium seems to have been (much as it is today) an end in itself, a value in itself--a *raison d'être*. Being and well-being, in this ideological frame, are essentially identical; they form the basis for the nineteenth century's regime of health.

In Hawthorne's sketch "The Old-Apple Dealer" and James's novel *Washington Square* we find resistances to this tautoontology of the well-balanced being. The impetus to read these works intertextually stems from James himself, from the publication of his Hawthorne monograph one year before the appearance of *Washington Square*; in this monograph he characterizes Hawthorne in a manner that distinctly resembles Hawthorne's characterization of a peddler in a railway station, and indeed his own characterization of *Washington Square*'s protagonist, Catherine Sloper. In various ways these figures exhibit a psycho-physiological condition that a few less cure-oriented medical researchers and theorists of the 1830s and 40s were beginning to recognize. They observed in hypnotic subjects or somnambulists (as well as in laboratory animals) what they came variously to call unconscious cerebration, the cerebral reflex function, cerebral dynamics, psychic automatism, and so forth, all of which refer to the seeming capacity of the brain to function without consciousness. It revealed to them the possibility of a consciousness, as the French historian Marcel Gauchet recently explains, that was not antecedent to, but coincident with, an individual's will and action. "Consciousness is an *accompaniment*," he writes, "a more. It is not a *source*" (*L'inconscient cérébral* 60). This hypothesis called into question the presumed metaphysical correlation of consciousness, will and self-determination; it thus led to reconceptualizations of the self as an entity never entirely whole, as always interrupted. Gauchet quotes the physiologist Moritz Schiff from an 1871 publication: "It is not consciousness that serves as the basis of thought; to the contrary, it is always thought that evokes consciousness....The consciousness of the self is therefore not continuous but *interrupted*....The *self* at a given moment is always incomplete."

This ontological interruptiveness, I argue, informs Hawthorne's and James's representations of persons who resist conventions of tonic equilibrium, consequently also resisting restrictive conventions of sociality. The apple-dealer's "patient despondency" and Catherine Sloper's "unnaturally passive" being render them effectively immune to, in the apple-dealer's case, humanist prescriptions for intersubjective communication and reciprocal recognition and, in Catherine Sloper's case, her physician father's prescriptions for genteel femininity and domesticity.

Scientific Language, Literary Value: Henry James and American Realism; Patrick O'Kelley, Princeton University

In "The Art of Fiction," Henry James inserted empiricist language in his attempt to assert the authority of the artist. Working within the contested boundaries of Howellsian Realism, his early writings accepted the affiliation of literature with science, objectivity, and the observable world in an era where Darwinism, telephones, and electric lightbulbs were proving the efficacy of the scientific method. He wrote complicit in the idea that the artist of post-Bellum America shared a public responsibility with the empirical scientist to observe and convey the observable truth. "Truth" (knowledge) was a valuable commodity, even in a pre-information age.

But, after two decades of academic professionalization, and with numerous actants speaking in the favor of scientific mastery over the natural world, James began to recognize that literature would have no autonomy if it continued to use rhetoric more successfully asserted by scientists.

Thus, his late novels and stories, I claim, sought to forge a new category of knowledge (and, therefore, value) different from both the scientific/economic and the metaphysical. Particularly in *The Golden Bowl*, James explores the unmeasureable and unknowable. While the argument that James anticipates many modernist concerns is not new, I frame his concerns with language and subjectivity in terms of a resistance to scientific discourse. Dramatizing this uniquely proto-modernist literary sphere, language and metaphor suggest, but are not equivalent to, the "real" that lies behind them (penetrating a Peircian understanding of language). The ambiguous is celebrated in an attempt to step out of the empirical system which labels literature as a commodity in a marketplace of knowledge systems. Unlike the Prince, James would engage the new era by re-writing the old terms of the aesthetic rather than subscribing to the purely scientific and economic.

"The Art of Fiction" and the Moral Sense: Henry James and the Ascent of Darwin; Shawn Gerety, City University of New York

Scientific and literary pursuits in the later half of the nineteenth century were collateral enterprises; experiments in science were conducted the same cultural space as experiments in fiction. One novelist who experimented as much as any scientist was Henry James (1843-1916). The innovation for which he is perhaps best known is the removal of didacticism from the novel. Critical accounts of how he managed to upend the moralistic intent of the English novel have been couched in explanations that privilege authorship, intention, and aesthetics. These accounts portray James as an esthete who, in the process of meticulously honing his craft, came to mistrust any "conscious moral purpose" as a corrupting influence on a work of art. Despite this received image of James the master craftsman, his contribution to the modern English novel did not occur in an historical vacuum. My talk will examine the cultural pressures that led James to relocate the moral dimension of art. For instance, as new disciplines like anthropology adopted the paradigm of natural selection to study mankind in the coordinates of time and space, the notion of moral codes as site-specific and contingent rather than global and timeless grew more widespread. James, ever the cosmopolite, sought to elevate the work of art above local biases. As he wrote in "The Art of Fiction" (1884), "the essence of moral energy is to survey the whole field."

Beyond the connection between Victorian science and aesthetics, I shall also discuss the moral sense in James's fiction. Of the many changes wrought by the large-scale cultural diffusion of Darwinism, the one that most intrigued James was the shift it demanded in the basis of moral being. After Darwin, the dictates of conscience derived from religious and cultural precepts were so badly discredited that Herbert Spencer declared the time-honored standards themselves "no longer fit." The moral sense, once thought to be God-given, absolute and timeless, was now viewed as an evolutionary adaptation which had developed in order to benefit the group in the struggle for existence. James viewed morality as a subtle and sometimes excruciating exercise of consciousness. When beset by moral crisis, his characters follow the law of evolutionary psychology first enunciated by Darwin: "-the mind is a function of the body." Like complex organisms, James's

characters interact with the social environment, register stimuli, and process an array of impressions. For James, the seat of moral governance resides in the sentient, thinking, experiencing human subject, not in fixed ethical laws or universal moral truths.

Unlike earlier Victorians, Henry James never succumbed to evolutionary angst or felt the need to impose "humanness" over "naturalness." Such distinctions, he felt, were largely misleading. "We are to remember that nature dwells within us as well as without," he wrote in one review that appeared shortly after the publication of Darwin's *Descent of Man* (1871). The Darwinian epoch is no longer off limits to scholars in the humanities; rather, as my paper contends, it constitutes an important chapter in literary and cultural history.

Session 9B: Postmodern Poetics (*Ardmore Room*)

Chair: Stuart Peterfreund, Northeastern University

Poesis Ex Machina: Notes Towards a Poetics of Artificial Intelligence; Matthew G. Kirschenbaum, University of Virginia

> "If a typewriter could talk, it probably would have very little to say; our automatic washers are probably not hiding secret dream machines deep inside their drums."
> -- Charles Bernstein, "Play It Again, Pac-Man"

This paper will attempt to open a dialogue between certain trends in contemporary experimental poetry and recent research in the field of artificial intelligence (AI). Such a proposition may strike some as willfully perverse, for poetry and artificial intelligence are often seen as representing two forms of experience at their most extreme remove; the poet and critic Don Byrd, for example, puts it this way: "Rather than seeing the human replaced by the machine, the poet envisions the perfection of individual human consciousness -- a consciousness which can hold its own with the new machines just as it has held its own with old ones, such as the printed alphabet" (12). Too often, I will argue, poetry is made a fetish toward which silicon eyes dare not turn. (Likewise, the recent chess match between Gary Kasparov and the artificial intelligence named Deep Blue received widespread media coverage precisely because of its dramatic staging of a similar confrontation between machine technology and the human intellect.) It is my contention that the questions now framing AI as a field of scientific inquiry -- questions concerning the relationship between language, representation, and knowledge -- are largely the same as those that have occupied much recent experimental poetic writing, and particularly that which is loosely called Language writing; a style of poetry which, not incidentally, is often attacked for its so-called mechanistic and lifeless qualities.

In particular, I intend to discuss the work of Steve McCaffery, Johanna Drucker, and Charles Bernstein (each of whom is an author associated, to a greater or lesser extent, with Language poetry). These writers are of interest not only because their texts offer direct interfaces to artificial intelligence (both thematically and formally), but also because they are each acutely aware of the way in which the printed word -- the alphabet of which Byrd writes -- exists fundamentally as a machine technology. I will suggest parallels in the work of each of these writers to connectionism, currently the dominant paradigm in AI research. Connectionism favors the idea of a self-organizing system or network in place of older models of intelligence and mind which are based on symbolic hierarchies and pre-programmed behavioral routines. This paradigm shift, I will argue, offers suggestive implications for the study of the proto-hypertextual elements evident in the writings of McCaffery and Drucker; and, the notion of the self-organizing system offers an important mechanism for navigating the fractal geometries of Bernstein's lines and stanzas.

In her 1991 study *Radical Artifice: Writing Poetry in the Age of Media*, Marjorie Perloff examined the orientation of much post-War experimental poetry toward the notion of "artifice": "the recognition that a poem or painting or performance text is a *made* thing -- contrived, constructed, chosen . . ." (27-8; emphasis in original). This paper will proceed by projecting such a view into our conception of artificial intelligence, a field which engages at the most literal level with such traditionally "poetic" concerns as the reception of language, the visualization of the surrounding world, and the construction of consciousness. I will conclude that the relationship between poetry and the machine is far richer than we habitually imagine, and that this relationship is worthy of a far more thorough consideration, both by students of contemporary poetry and poetics, and by students of other technologies, not the least of which is the technology of the mind.

Keywords: Poetry/Poetics, Artificial Intelligence, Connectionism, Technology of the Book/Mind, Steve McCaffery, Johanna Drucker, Charles Bernstein

"Sick Women": The Male Line & the Female "Infection"; Suzanne Paola, Western Washington University - Bellingham

I propose to examine the image of the poetic line and poetic meter as metonymic of the healthy male body, an image of particular concern in American English poetry under the influence of Walt Whitman. Whitman used the text as literal embodiment of his physicality throughout *Leaves of Grass*, writing in "Song of Myself, " "this is no book,/Who touches this touches a man." Dr. Oliver Wendell Holmes, in his 1882 essay "The Physiology of Versification" objectifies this concept physiologically, tying the line to pulse and respiration and gendering his readings with his normative presumption of the author/reader's male physiology. Men, with their "ample chests, " are suited to the intellectually demanding long line; women and the young are relegated to the short syllable count of nursery rhyme and other such verse.

Charles Olson, in his seminal (!) 1950 essay "Projective Verse," continues the idea of prosody as reflective of the male autonomic nervous system: verse, he claims, must put into itself "the breathing of the man who writes, " and he elaborates on the necessity of male bodily presence in poetic composition: "because there is a choice of words, the choice, if a man is in there, will be spontaneously, the obedience of his ear to the syllable. " Allen Ginsberg changes Olson's model to a genital one, developing, in *Howl*, the image of the poem as the healthily sexual male body, a manifestation of the poet's "gyzym and consciousness." Even the postmodern poets of the L=A=N=G=U=A=G=E movement continue, via the Lacanian phallus, to inscribe the male body onto the (aesthetically) healthy poem. Attempts to neutralize their language become comically gendered--as when Charles Bernstein admonishes Ron Silliman to let women "transform" the phallus so it can become "the love that restores us.

The model of French feminists like Hélèn Cixous and Luce Irigaray--that we find a literature that somehow serves as metonym of a woman's physiology, reflecting what Irigaray calls "the geography of her pleasure"--is a useful one. I propose to examine several authors, primarily Emily Dickinson, Jorie Graham and Lyn Hejinian, who operate on a level that could more accurately be called a "viral" level, whose work aims at producing what Emily Dickinson once called "infection in the sentence. " Graham's work, particularly in *Materialism*, uses what she calls "colonized" male texts which her own language "invades," producing recombinant patterns that can be usefully compared to the action of viral resequencing of human DNA. I will also look at Hejinian's dehierarchizing of the sentence through floating subordination and spatial composition, and Dickinson's "infection" of the male voices of prophecy, Scripture and hymn-an appropriate starting point, as her contemporary, the influential doctor S. Weir Mitchell wrote in *Doctor and Patient*, "the man who does not know sick women does not know women.

Poetry as External Knowledge: Re-Examining the Epistemological Boundaries between Literature and Science; Fred D. White, Santa Clara University

When do we truly "know" a scientific concept? Is it when we learn the mathematics behind it? Or peruse a text that interprets the mathematics, or places it in a larger context? Perhaps we do not truly know the concept until we directly observe its manifestation in the laboratory, or contemplate its significance in the context of related concepts, or express the concept artistically. Bronowski, Bruner, and others have examined the role of creative imagination in the production of scientific (external) knowledge; and many scientist- authors (Eiseley, Carson, Thomas, etc.) have demonstrated science's capacity for yielding aesthetic awareness (internal knowledge). But does it also make sense to speak of literary works--poetry for example--as capable of yielding scientific (external) knowledge? I wish to argue that it does.

Archibald MacLeish ("Why Do We Teach Poetry?") cautions us against preoccupation with the role of aesthetic values in poetry (poetry as its own excuse for being; poetry as expressing

feelings or experiences that cannot be communicated non-aesthetically), and asserts that poetry, like science, does indeed yield knowledge--not of abstractions dissociated from the felt presence of a thing or experience, but knowledge of the felt presence itself, a kind of internal knowledge. But whereas MacLeish distinguishes sharply between the abstract, external knowledge of science and the sensory- object knowledge of poetry, I argue that both modes of knowing operate--indeed *must* operate--interactively in both domains. An examination of this interaction can give us a deeper appreciation of the interplay of science and literature, and of the complex dynamics of knowledge.

Keywords: aesthetics, epistemology, knowledge, literature, poetry, science

Session 9C: Primates, Boundaries, and Zoos(*Brookwood Room*)

Chair: Richard Nash

This panel will explore primate behavior, and representations of primate behavior, in Zoos and in Nature. The very makeup of the panel will illustrate the (we hope) amicable and productive border crossings that are encouraged by the hybridized Nature/Culture space of the zoo. The zoo is a space of scientific research into the natural behavior of primates, and it is also a representational space in which behavior is staged as natural for cultural consumption. In presenting ongoing research efforts in both animal behavior and cultural studies, we hope to enable productive discussion on a number of fronts: the return of species to the wild, the relation of sex and gender to nature and culture in non-human primates, the constitutive role of rhetoric in our investigation of nature, and the liminal space of the zoo itself.

Reintroducing Golden Lion Tamarins to the Wild; Tara. S. Stoinski, M. Bowman, B. B. Beck, & T. L. Maple

The Golden Lion Tamarin Conservation Program represents one of the few efforts to reintroduce a captive-born primate species. Reintroduction has played an integral role in the conservation of this endangered species since 1984. In order to prepare captive -born individuals for life in the rainforests of the Poco das Antas Reserve in Brazil, a Gateway Zoo Program has been established at six different zoos across the United States. Free-ranging exhibits at these Gateway Zoos provide the tamarins with the opportunity obtain pre-release training that is meant to improve their chances for survival in the wild.

A breeding pair of golden lion tamarins has been observed since their arrival at Zoo Atlanta in the spring of 1996. Behavioral changes that have occurred throughout their training period will be discussed.

An All-Male Gorilla Group at Zoo Atlanta; Kristen Lukas, Tara S. Stoinski, and T. Maple

Zoo Atlanta's gorilla exhibits were designed to house western lowland gorillas (Gorilla gorilla gorilla) in naturalistic settings, composed of species-specific social groups of one silverback, several adult females, and their offspring. As more infants are born into zoo groups, however, the maintenance of appropriate social groups eventually results in excess adult males. Zoos are coping with this situation by forming all-male groups consisting of sub-adult or juvenile males.

The behavioral changes that have occurred in conjunction with the formation of an all-male gorilla group at Zoo Atlanta have been documented. A focal animal sequential behavior sampling method was used to obtain frequency and duration information on the behavior of a sub-adult male (Kekla) as he was introduced to one sub-adult male (Taz) and a juvenile male (Stadi), first in the presence of an adult female (Katie), and then following the removal of the female from the group. Data were collected after the evening meal in their indoor holding enclosures.

Preliminary results of this ongoing study show that this introduction differs than those that have occurred in the past at Zoo Atlanta with bisexual groups. Most solitary behaviors have declined since the introduction, and the amount of inactivity has increased. Taz's exhibition of regurgitation and reingestion of his food has declined, sustaining at very low levels, due primarily to within-group competition for the regurgitant. In addition, the alliance formed between Kekla and Stadi following the introduction has led to the exclusion of Taz in social play. Overall aggression has declined from baseline levels, presumably as a result of the removal of the female from the group.

Observing Gorillas and Seeing the Family; Richard Nash, Indiana University

This summer's primate cause celebre, the heroic rescue of an injured boy by Binti, a female gorilla at the Brookfield zoo, replayed a scenario enacted in the mid-eighties by Jambo, a silverback at the Isle of Jersey Zoo. In that case, a boy fell into a concrete moat, knocking himself unconscious. The silverback, with great gentleness, sat next to him, stroking his back protectively, until the boy regained consciousness, at which time Jambo ushered the other gorillas in the habitat to their cages while human rescuers entered the habitat to tend to the boy. That case was heralded as the destruction of a "king kong" myth about male gorillas, while Binti's case has been trumpeted as testifying to the universality (indeed, species myopia) of maternal instinct. Gender, clearly, inflects our representations of these parallel tales of gorilla heroism. In this paper, I want to attend to how we want to see gorillas, and the roles that human concerns about gender, sexuality and family dynamics play in that viewing.

In the brief time allotted before general discussion, I hope to sketch--not trace--a genealogy of gorilla observation from the present day back only as far as George Schaller's initial long-term observation at the end of the 1950s. What even such a thumbnail sketch suggests is the way that cultural pressures about family dynamics in the west during that period significantly shape our perception of the "natural" behavior of gorillas. What is the connection between viewing gorillas in their natural habitat, viewing them in captivity, and viewing them on film? What relations connect our viewing practices, naming practices, and the narratives we generate? I want to juxtapose observations of gorillas in different settings to highlight those attributes humans choose to observe and call attention to in their viewing (and narrative) practice. Finally, I want to hazard some speculations about how these practices, which license some observations and restrict others, inflect--and perhaps, deflect--our attention to primate communication.

Session 9D: Ventriloquised Subjects (*Fulton Room*)

Chair and Respondent: Anne Balsamo, Georgia Institute of Technology

Autopsy as Ventriloquy: The Case of Harriet Martineau; Anka Ryall, University of Tromso

The focus of this paper is a lecture delivered before the Clinical Society of London on 27 April 1877. Modestly titled "Remarks on the Case of Miss Martineau," the lecture is significant both because of its subject, one of the most prominent female intellectuals in nineteenth-century Britain, and its author, Thomas Spencer Wells. In the history of British gynaecology, Wells is known as a successful pioneer and advocate of ovariotomy, i.e. the surgical removal of cystic or cancerous ovaries. When he performed his first ovariotomy, in 1857, the procedure was still viewed as little short of murder. Twenty years later the mortality had been dramatically reduced, and his work was hailed as one of the greatest achievements of modern surgery. Hence it was at the height of his career that Wells--who according to his biographer was usually "tactful enough to keep clear of such activities"--got involved in the public debate about the medical history of his famous contemporary, the writer and feminist Harriet Martineau. Wells had never met Martineau, who had died the previous year at the age of seventy-four. He was called upon to provide an expert evaluation of several conflicting accounts of her illness(es) and death. The documents he refers to in his lecture include several of Martineau's own writings, most importantly her controversial posthumous autobiography, as well as various medical reports by doctors she had consulted over a period of almost forty years. But for Wells and the other medical men who participated in the debate, the definitive truth about Martineau was revealed in the post-mortem report written by her last medical attendant, James Moore King. 42 hours after Martineau's death, King had performed an autopsy on her body and removed an enormous pear-shaped ovarian cyst that filled the lower two-thirds of her abdomen, had displaced the other internal organs and obviously caused pressure on her lungs and heart. Interpreted by Wells, this expansive cyst is ventriloquized into an authoritative narrative about her life and "peculiarities of character" that exposes her own confident self-assessments as false or misguided. The question here is not whether Wells's version was more correct than Martineau's, though in a medical sense it probably was. What interests me is the ideological work that his lecture accomplishes. By constructing Martineau's life in terms of an operable female disease unfortunately left uncured, he sidesteps the complex challenge she posed to those boundary demarcations--between men and women, illness and health, science and lay--on which his own work and the emerging field of gynaecology rested.

Incubabies and Rejuvenates: The Traffic Between Technologies of Reproduction and Age; Susan Squier, Pennsylvania State University

This paper will explore the links between two of the preeminent early twentieth century interventions in human life: the set of techniques for scientifically shaping conception, gestation, and birth that we would ultimately know as reproductive technology, and the set of surgical and endocrinological techniques for retarding and or reversing aging and death known in the '20s and '30s as 'rejuvenation therapy.' Both projects bore the stamp of several closely linked discourses emerging or achieving prominence in the first three centuries of the twentieth-century: the eugenics movement, the new fields of chemical embryology and 'sex endocrinology,' the sexology movement, and the emerging field of gerontology. I will situate rejuvenation therapy and reproductive technology in relation to these discourses, suggest what the two technologies share as life-span interventions focused on the beginning-of-life and the end-of-life, and gauge the phantasmatic cultural investment they express. Along the way, I will consider the representation of rejuvenation therapy in two works of fiction, Gertrude Atherton's 1923 *Black Oxen* and C.P. Snow's anonymously published *New Lives for Old* (1932) and of reproductive technology in Jeb

Powell's science fiction short story, "The Synthetic Woman" (1940). In particular, I will focus on the two subjects these technologies create--the incubaby and the rejuvenate--in order to ask what cultural phantasies they ventriloquize for us. I will explore how the different scientific up-take of these two life-span interventions reflected different responses to their representation in the popular press, and I will conclude by summarizing the challenges these new subjects pose to our theoretical and personal understandings of the beginning and end of life.

Single Parents, Singular Subjects: Preformation in 17th-Century England; Eve Keller, Fordham University

William Harvey's (erroneous) discovery in the mid-seventeenth century that there exists no post-coital material in the uterus necessitated new theories of embryogenesis, since all previous theories had assumed the presence of either mixed semina or male semen and female menstrual blood as the basis for generation. Harvey's own speculations about the means of fertilization and the process of the embryo's growth and development were soon overshadowed by competing theories of preformation, which held that the organism pre-existed in some form in either the egg or the newly discovered animalcule. Certainly, the debate among these theories and their various permutations had much to do with the details of what the researchers saw from their dissections and experiments; but because these writers were delving into what they themselves considered (as Harvey put it) "the heart of Nature's mystery," and because that mystery lay in the inner sanctum of the female's insides, the debate in which they engaged entails a complex of meanings that needs to be unpacked in terms more far-reaching than biology alone. Configurations of the embryo (as "a young man released from leading strings," as "a little engine"); descriptions of the process and purpose of fertilization (as "irradiation," "contagion"); depictions of animalcules seen under a microscope (as "worms," "homunculi") -- though routinely presented with seeming matter-of-fact simplicity, all mediate cultural concerns about identity, subjectivity, and gender relations. This paper proposes to examine those concerns as they animate the discourse of embryogenesis in late seventeenth-century England.

Session 9E: You Just Don't Understand: Talking Across the Boundary at SLS (*Georgia Room*)

Organizer: Jay Labinger, Caltech

Untitled Abstract; Frank Durham, Tulane University

I am convinced that misunderstanding, and not simple incommensurability, is a factor in the hostility that I see the physics community directing toward the cultural studies, sociology of technoscience, and literary/theoretical communities. Physics as community is embattled now, but suspicion tending toward hatred is older than budget problems and even predates the end of the Cold War. Musing about this, I am inclined, not so much to wonder whether reconciliation might be possible no mechanism exists to attempt that but rather what the rhetorical strategies for an imagined mediation might be. The thing looks to me like an exercise in theory.

If it turns out that I have merely stated the premise of the panel, let me go on to say something about the particular shape of my reveries. I begin by imagining that physicists (exercising their genius for the out-of-sequence creative leap) would want to think of "physics" as having multiple meanings. I dream that the scientists, back in a logical mode or perhaps driven by some fatigued gene, would find that this insight requires the existence of strategies to address the antagonisms among those meanings. Generalizing the original insight, multiple meanings, they would conjecture that the needed strategies must exist in a space of multiplicities. Now operating reductively as is their habit, they would look past SLS and other messengers of antagonism/multiplicity and would search for tools, not to say for weapons, within the landscapes of metatheory. They/we would then being to build neo-Newtonian models of the interactions among the found elements: physics embraces semi-objects, physics co-opts reliable witnessing, physics adopts feminist ethnography, physics adapts "Kate Hayles." The list is infinite but easily truncated. At the corners of the dream untenured lit/sicists might romp in the impossible worlds that symmetrizing makes: cultural studies embraces physics, and so on. Altogether it is REM-induced border talk, and the arrival of new e-mail always wakes me before the higher-order models, the ones that are closer to literature and to reality, begin to emerge.

"Where is the Beef?"; Pierre Laszlo, Ecole Polytechnique, Palaiseau

Unfortunately for our literary colleagues intent upon deconstructing scientific texts, and relying unwisely for their knowledge of science only upon contemporary sociology, there is a truth-value to most scientific statements. Hence, disregard of content voids the criticism.

'Tis a pity. There is so much to be gleaned from rhetorical and from textual analysis of scientific texts, provided one makes the effort at understanding them from the inside. Such an investment is unavoidable. Deafness of sociologists of science to what scientists say makes them mistake shadows for substance. OK to science anthropology, provided that it be anthropology and no mere phraseology. In other words, generalized relativism may be ethically sound, besides being politically-correct, it lacks epistemological relevance.

Concrete examples to be brought in include scientific illustration, in its syntax, and with its rhetorical purpose; and a scientific fashion of the 70s, nmr shift reagents, where a technical stopgap was misread as a major scientific advance.

Untitled Abstract; Richard Lee, SUNY-Binghamton

Already by the mid-nineteenth century, the science/humanities antinomy was well established and hierarchical, even though strongly resisted--the superiority of ordered/law-like, factual/expository scientific knowledge over the chaotic/anarchic, impressionistic/poetic thought developed in the humanities. By the end of the century (as the Huxley-Arnold exchange showed) the the social sciences (economics, sociology, political science, history, anthropology, orientalism) were emerging

in an uneasy position between the sciences and the humanities to channel and control change in the social world. Values and systematic knowledge continued to be mutually exclusive concerns (as the replay of Huxley-Arnold by Snow and Leavis makes clear), however, until the 1960's when an epistemological upheaval accompanied the manifestations we are more familiar with. There were two movements actually. One was in the sciences with the development of studies of complex systems and self-organization. This led to a reconceptualization of the classical model based on reversible (Newtonian) time to include self-organization, irreversibility (the "arrow of time") and limited predictability. Meanwhile, in the humanities, assaults on foundationalism and essentialism undermined the (Cartesian) duality of subject and object. The two taken together reopen the question of objective certitude versus historical finitude. The structural sequestration of spheres of knowledge no longer appears as an unquestioned given and the intellectual is liberated to "think the unthought", to participate in the imaginative creation of the future by imagining possible utopias and, admitting that all knowledge is socially constructed, working to determine their actualization.

Untitled Abstract; David Porush, Rensselaer Polytechnic Institute

Since its inception, the SLS has had problems sustaining a true dialogue between science practitioners and the majority of its members, most of whom are trained in critical (literary) methods and perspectives and whose work tacitly or explicitly question the validity, solidity, or facticity of scientific truth.

This conflict stems not so much from material circumstances but from deep and essentializing epistemological commitments that force the two perspectives into contradictory positions. I propose a tertium quid, a way out, a synthesis, deconstruction and transcendence of the simple dialectic, which I call *eudoxical discourse*. Though it represents an abstract, third sort of episteme, I hope to discuss pragmatic ways it may work to jump over the rift and establish a shared mode of discourse between scientists and "readers" of science.

The Field of Interpretive Immanence: From Allegory to Epistemocritique in Literature and Science; Martin E. Rosenberg, Eastern Kentucky University

> *Art, science and philosophy seemed to us to be caught up in mobile relations in which each is obliged to respond to the other, but by its own means.*
> --*Gilles Deleuze*, "Preface" to the English translation of *Difference and Repetition*

The real title of this panel, of course, is "can there be a theory of literature and science?" because in order to understand the diverse practices under this increasingly unwieldy rubric, we must come to terms with the ways in which practitioners of literature and science forge correspondences between disparate domains. At each moment of a practitioner's cultural work, a field of interpretive immanence emerges from the interstices which are the result of those forged correspondences. Now it is possible to conceive of that field in terms of the structures of varying stability that might become forged, or in terms of flows through those structures that indicate processes of significatory circulation made possible by the forging of those correspondences. Two issues emerge from an interrogation of the nature of this field of interpretive immanence: the problem of the stability of the structures forged, and the problem of identifying the "logics" governing the flows of meaning through those structures at any given historical moment.

Gilles Deleuze speaks specifically of the need to create links among philosophical concepts, artistic constructs and scientific functions, yet he argues that these linkages require a certain mobility which reflects the contingencies of the historical moment in which these relationships are forged. The field of interpretive immanence must be defined in terms of a specific historical moment as well as in terms of these linkages, so that the problems posed by the practice of forging links (in order to create structures and enable significatory flows) become visible when we confront their stability with respect to that historical moment--especially when we conceive of that moment

as charged with epistemological and ideological assumptions which implicate those links and that moment in complex ways. The term from literary theory which most closely resembles the activity of forging of links or "correspondences" grounded by such a field is of course allegory. But in a more ironic cultural moment, as Bruce Clark demonstrates in his study of Victorian allegories of thermodynamics, this term refers instead to "an anxious realm" marked by instability.

I would like to confront a more recent term that resonates with Deleuze and Guattari's method of forging "mobile relations" across disciplines, while at the same time implying self-consciousness toward the structural stability and consistency of significatory flows which intrudes at the historical moment when those relations are forged. This term, called epistemocritique, and exemplified by the work of Michel Serres as well as Gilles Deleuze, recently gained coinage on this side of the Atlantic through a double-issue devoted to it in the journal Sub-Stance. The term refers to the focus for the forging of such "mobile relations" at the fundamental levels of epistemology where even disparate knowledge realms of a given historical moment might share both structures and processes of thought. One way beyond the limits of allegory is by making visible the map constituting the topology of interpretive immanence formed by those mobile relations and the chart of the tentative significatory flows made possible by those relations. While we may experience the "anxiety" that comes from knowing that the map or chart can never be the territory, we may take some "comfort" in discovering that, while this map can only refer to a virtual domain, that domain has its own terrain, no matter how transitory with respect to its historical moment. Our necessary recourse to those structures and flows may make possible the critique of the complex epistemological and ideological systems implicated in that moment. It is the cultural imperative to critique those systems that indicates the limits to allegory, and the promise of epistemocritique.

I will anchor this discussion by looking at the cross-disciplinary borrowings of the chessboard, chess pieces and rules, to explain cultural and physical structures and processes by de Saussure, Wittgenstein, Poincare, Duchamp, Beckett, Cage, Pynchon, and Feynman.

Untitled Abstract; Phoebe Sengers, Carnegie Mellon University

Doing interdisciplinary work in Artificial Intelligence and Cultural Theory, I have become painfully aware of successful and not-so-successful strategies for communicating across the great divide. Here, I would like to put forward some of the major pitfalls that have ensnared me along the way, as well as some of the more successful strategies that have resulted from these lessons. Some of the lessons are relatively obvious; for example, in making interdisciplinary forays it is important to motivate one's goals for both disciplines, and not just from the point of view of one of them. Others are less obvious, like subtle differences in language use that can easily lead to misunderstanding ("Saying science is evil is unscientific; saying science is *stupid* is fine"). Fundamentally, communicating across the divide - assuming one really wants to communicate - is a kind of intellectual translation, necessitating familiarity with and respect for the worldview of the individuals on both sides.

Session 9F: From Bodies to Flesh: Toward a Distributed Corporeality (*Piedmont Room*)

Chair: John Coletta, University of Wisconsin - Stevens Pointe

Participants: Richard Doyle, Penn State University
Brian Rotman, Memphis University
Jeff Karnicky, Penn State University

This panel will troll the sites of technoscience, mathematics and science fiction for conceptual tools that trouble any unified, automonous rendition of corporeality. More than an attribute of bodies, flesh, like subjectivity, becomes a decentered, iterative effect that is distributed across networks of global capital.

Saturday, October 12, 4:45 - 5:00 pm: Refreshments (*Habersham Room*)

Saturday, October 12, 5:00 - 6:30 pm: Session 10

Session 10A: Romantic Discourse and the Polar Body (*Ansley Room*)

Organizer: Laura Dassow Walls, Lafayette College

Polarity, the dynamic union of opposites, is a key organizing metaphor for Romanticism and, as Latour has shown, for Modernity more generally. This panel will explore several dimensions of the polar metaphor. First, Coleridge uses polarity to "individuate" man from nature, making way for Arnold Guyot's "physiology" of the earth, an early figuration of the Gaia hypothesis by which the sublime collective uses the individual to constitute itself. The race and gender polarities employed by Guyot create the problem-situation for Margaret Fuller, who turns polarity into hybridity, a form of agency and of cultural critique for women and racial others. Finally, the sublime configuration established by Coleridge and critiqued by Fuller has recently gained new power through systems theory, which yet may also offer a means of undermining the powerful ideology of the sublime.

Keywords: Romanticism, Hybridity, Polarity, Modernity, Travel Writing, Sublime, Future, Quantum Theory, Systems Theory, Gaia

Opposites Attract: Global Polarity and the Single Life; Laura Dassow Walls, Lafayette College

In *The Theory of Life*, Coleridge attempted to nail down the one fundamental principle of life, which in the general Romantic way he thinks of as the dynamic union of opposites, In making this concept scientific, not just poetic, he has all of German Naturphilosophie and its Angle-theological equivalent to work with: together they formed the dominant science of his day.

Coleridge defines the tendency of life and the goal of Nature as "individuation," and life's "most general law" as "polarity, or the essential dualism of Nature." In Coleridge's world, originating "oneness" cannot be conceived without imagining it as a mid-point producing "two opposite poles": "Thus, from identity we derive duality, and from both together we obtain polarity, synthesis, indifference, predominance." He extends this to the globe itself (and so inscribes the whole surface of nature) he concludes that "all things spring from, and subsist in, the endless strife between indifference Chomogeneity, sameness] and difference." And he does mean all *things*: the "whole history of nature," life, the position of man, woman as a less "individuated" (hence in effect less evolved) form of man. Everything is "the synthesis of opposing energies."

This war of polarity produces increasing individuation and ever-higher forms of life, until we reach Man, the opposite "pole" of Nature and the ultimate in individuation. So, the most individual man is the truest; yet, "The intensities must be at once opposite and equal. As the liberty, so must be the reverence for law. As the independence, so must be the service and the submission to the Supreme Will! As the ideal genius and the originality, in the same proportion must be the resignation to the real world . In the conciliating mid-point, or equator, does the Man live, and only by its equal presence in both its poles can that life be manifested!"

The scientist who put the globe itself in service to this metaphor was Arnold Guyot (*Earth and Man* [1849]), for whom the earth is a huge body whose physiology he reads according to the dynamic and exciting polarities of excess and lack, superiority and inferiority, aggression and reception, male and female, master and servant, Old World and New World, North and South. Inequalities exist to create the conditions for exchange; hence desire is the engine of progress. Global thermodynamic polarity powers the Empire. Guyot wrote, among other things, the graded series of geography textbooks which long remained standard in American schools. His ideas accorded well with Puritan avowals that God created inequalities to bind the community into a

whole; in turn, Puritan principles that mandated freedom through obedience to God and Father redounded to the Baconian science that commanded nature through obedience to law. In the aesthetic of the polar sublime, the individual is constituted by the gigantic body of the collective. The Gaia hypothesis revives for today the nineteenth-century metaphor naturalizing the sublime authority of the modern state.

Encountering Hybridity: Margaret Fuller and America in Transition; Cheryl Fish, Nassau Community College

In this paper, I shall examine how Margaret Fuller, one of the leading figures of the American Transcendentalist movement, formulated an evolving definition of national identity and what she called the American form of "genius" based on her travels to the American Midwest. The concept of hybridity--the mixing of different persons--in this case, persons of different ethnicities and races--is a central theme of *Summer on the Lakes*. in 1843 as well as a trope for her process of divesting herself of a Eurocentric, patriarchal education. For as she met with defeated Native Americans and emigrants from Europe and New England, hybridity presented a promise and threat in relation to her own search for positionality as an American woman and intellectual. Hybridity is also a form of "transition state" that Fuller, following Fourier, believed was a necessary stage until the American form of genius would emerge, "of a mixed race, continually enriched with blood from other stocks."

I shall discuss the influence of dominant theories of racial mixing as well as Romantic aesthetics on Fuller, and how her anxieties about being a public intellectual are often displaced or embedded in a discourse of loss and the deformed sublime. Fuller's poetics incorporate the idea of transgression, racial amalgamation and the desire for more varied gender roles, but her "melting pot" thesis, which claims that mixing people produces a new race with distinctly new characteristics, did not generally include Native Americans or African Americans. I read *Summer on the Lakes* as a text that posits an evolving formulation of the meaning of nationhood and gendered selfhood as mediated by familiar and different bodies in motion, approaching varying states of hybridity and social change. Fuller's definition of America in the present and future was expressed through her analysis of the hardships faced by frontier women and the Native Americans who had already been driven away, as well as her inclusion of the stories of three foreign, "hysterical" women who I read as case studies that formulate hybridity as a form of agency for women as well as a kind of cultural critique. Hence, her concept of heterogeneity contains an awareness of, yet contradictory acceptance of the impact of race on her formulation of a "new order, new poetry" that is "to be evoked from this chaos" (*Summer*, 18) on the American frontier. I shall relate her use of hybridity and transition as a way of overcoming or gendering polarities, and show how racial and scientific theories that circulate in her text create contradictory impulses in this hybrid travelogue.

The Definite and the Vague: The Sublime Configuration of Modernity; Linda Brigham, Kansas State University

My talk begins with the observation of a fact I take to be rather curious: the way in which quantum physical theory has been appropriated in the humanities. Specifically, I wonder why discussions in the humanities tend to take their cue either from a Niels Bohr-like pragmatism, or an Einsteinian humanism, but tend to leave out of the reckoning altogether the many-worlds option put forth by Hugh Everett, John Wheeler, and Neill Graham, who regard each of the superposed states of the electron in the famous split beam experiment as real, and deny the system's subsequent reduction.

This is not, however, a technical paper, and particularly in the wake of the Ross-Sokal affair I (as a professional in the humanities) leave the precincts of quantum mechanics quickly for safer ground. I suggest a relation between cultural disinterest in the many-worlds hypothesis to Stanley Fish's insistence that on the one hand, each of us and each of our respective worlds is the product of our situatedness, our context, culturally and individually. There are, consequently, many worlds. On the other hand, Fish is emphatic about our inability to make any use of this

multiplicity, other than to reason that it must exist. We are imprisoned in our own situatedness. Once again, many worlds makes sense, is consistent with theory. But it is of no use.

I challenge Fish's pragmatic refusal of many worlds, as well as a more foundationalist view of a single, for the most part eventually knowable world, as the product of a particular topology of modernity: a topology that finds its theoretical expression in accounts of the sublime. The sublime is the key to a conflation of vagueness with futurity, a naturalization of phenomenologically linear temporality, an overcoding of individuation with definition and pastness. This overcoding is not necessarily a universal, however. As a peculiarly sublime configuration it is also peculiarly modern, modern in Latour's sense of producing distinct disciplinary cultures of information, each of which horizons itself with the appearance of infinite terrain for future inquiry.

This sublime is a pragmatic sublime, and has a biological and cognitive echo in Humberto Maturana and Francisco Varela's theory of autopoiesis, much discussed this past year in joint issues of *Cultural Critique* and *New German Critique*. Amidst the criticisms of autopoiesis I pull out Niklas Luhmann's system theory as surviving the objections, because he embraces the full philosophical implications of reentry and reiteration for time and identity. I think Luhmann's version of autopoiesis re-encultures it as a regimen of modernity: in Luhmann's terms, the future, on the one hand vague, and on the other the domain of disambiguation, is a paradox of modernity guaranteed to keep its various "projects" unfinished.

What might be an alternative? Theorizing a way out of this is fraught with logical difficulties, but I suggest one way to proceed would be to separate futurologies from the sublime, to construct possible worlds in a more technical philosophical sense; worlds initially unfurnished by extrapolations from the present.

New Genres in Exploration: Dmitry Shparo's Russian Arctic Narratives; Barry Pegg, Michigan Technological University

The perennial attraction of exploration literature may be its minimalist, mythic quality, familiar to most of us in clichés about "stark realism," "a handful of men of indomitable courage pitted against unrelenting nature," and the like.

Though both the North and South Poles were reached in the first quarter of this century, neither the interest by adventurers in the polar regions nor deployment by writers of this initially elemental, even perhaps crude, form of literature has abated. As the literature has developed, it has recapitulated heroic, romantic, and realistic styles. The focus of writers has moved from the "heroism" displayed in the struggle (against ice and unpredictable magnetic phenomena) for safe and accurate navigation, to the realism of the search for resources such as oil, furs, and fish, and to the resultant clashes between indigenous people and the invading culture -- material affording opportunity for a romantic, self-questioning approach.

Our experience of this kind of literary-generic evolution has so far been restricted to the literature of the "Inuit" Arctic of Alaska, the Canadian Arctic archipelago, and Greenland. Yet the Russian Arctic, through which half the Arctic Circle runs, presents a huge gap in Western popular understanding of Arctic literature. A similar sequence of events has taken place in the Russian Arctic as in the Inuit Arctic, and it is no surprise to find both the cultural and literary patterns of the Arctic with which we are familiar confirmed there: the cultural pattern of the inevitable approach of "fossil-fuel colonialism" postponed but not prevented by distance and climate, and the pattern of literary forms developing from heroic battle against the elements to chronicling more subtle human interaction.

The example of Russian Arctic writing I have chosen represents the exploration and writings of Russia's most famous, most traveled, and most popular polar adventurer, Dmitry Shparo. In his writing, heroic narrative has developed into a kind of recycled or double genre; Shparo's might be called "Polar Exploration Archaeology." In *Tragedies of the Arctic*, he presents his own successful investigation of what happened to lost expeditions of the past, including (among others) his discovery of a food depot of the turn-of-the-century Estonian explorer Baron Eduard

von Toll, and the exhumation of the skull of the 18th-century navigator Vitus Bering, making reconstruction possible which corrected the long-standing error of the hitherto accepted portrait; archival research revealed it to be that of Bering's namesake uncle.

Shparo's writings, then, are an important piece of evidence confirming uniformity of both historical and literary development between the Russian and the Western Arctic.

Keywords: Russia, Arctic, Shparo, Polar, Exploration.

Session 10B: Film and Virtuality: Gender, Race, Cliché (*Ardmore Room*)

Chair: Robert Markley, West Virginia University
Respondent: Ronald Schleifer, University of Oklahoma

This panel presents different perspectives on the complex relationships between virtual technologies and contemporary film. Rajani Sudan examines the interanimating images of racial and sexual otherness in "Rising Sun." Concentrating on the role of technology in uncovering an evil that is ultimately located within the patriachal "other" of Japanese commercial aggressiveness, she explores the ways in which racial and gender hierarchies are reinforced by an appropriation of those qualities that signify capitalist success. Tom DiPiero examines the technophobic plot of "The Net" to argue that technology is both foregrounded and trivialized by being superimposed on a familiar "thriller" plot. The heroine represents a feminine intrusion into a masculinized world of technological control--an intrusion that both reasserts basically masculinist values and that offers a humanistic symbol of hope and resourcefulness against a demonized and totalizing technopolitics. Michelle Kendrick draws on recent interactive films to examine the ways in which this ostensibly liberating and empowering filmic form reinscribes conventional notions of a masculinized subjectivity. The "choices" that interactive cinema offers thus elevate the notion of viewer as consumer into the commodified object on which such " interaction " depends. Taken together, these papers challenge romantic views of virtual technologies by emphasizing the ways in which they become plotted and emplotted within conventional plots and conventional conceptions of gender and race.

Sex Sim; Rajani Sudan, University of Texas-Arlington

Abstract not available

Netting Virtual Villains: Evil and the fear of technology; Thomas Di Piero, University of Rochester

Abstract not available

Mothers, Monsters, and Family Values: Protocols of Pregnancy and Older Women; Angela Wall, University of Wisconsin - Milwaukee

In many media depictions of both single and dual parenting, the qualities that define a good mother are often drawn along conservative lines. In the realms of party politics, advocating the rights of the traditional family has become a political safety zone, and these political positions have helped to develop a "public consensus" on what constitutes a "fit mother." This paper is part of a larger project that addresses the cultural, social and medical constructions of "unfit mothers." However, here I focus specifically on how a woman's age offers one of the ways in which a relationship between women and pregnancy is publicly coded and valued.

As technologies of fertilization enable women to become pregnant in ways that are constructed outside of the traditional realms of motherhood, the relationships of these women to perceptions of family values have become increasingly uncertain. Recently, the media has been filled with stories of mothers pregnant with the child of their desperate and childless daughter. Such accounts shift between describing the act of surrogacy as selfless charity and uncomfortably skirting value judgments that question the degree to which such acts exceed the bounds of decent family values. Similarly, when it comes to their representation in the media, the family values of women who choose to parent later in life--often after having built a successful career--fall into an equally shaded twilight zone. Lesbian couples, for whom more socially sanctioned forms of motherhood are not always viable, also often have children later in life. The decisions made by these groups of women to become pregnant can reductively be defined in terms of a ticking

maternal clock; however, media accounts typically marvel at the medical technology that allows such women a reprieve. At the same time, medical opinion seems to veer towards discouraging older women from pregnancy by focusing on the potential threat a late pregnancy poses to a child's health. Older women who choose to become pregnant take their lives--and most importantly their bodies--into their own hands, and this factor makes them troubling and unruly; their actions pose a challenge to medical advice as well as to traditional family values. Close readings of various "political" statements medical opinion and popular texts reveal how technologies of representation participate in the construction of particular subjectivities which critically inform, and are mutually informed by, the current political climate. By focusing on how these marginalized mothers are discursively constructed, and by exploring how we can understand the social function of pregnancy.

Teaching Women to be Patients: Mental Illness Films of the 1940's; Chris Amirault, University of Wisconsin-Milwaukee

This paper focuses on the genre of 1940s mental illness films to analyze how the female psychiatric patient has been used as both a narrative and a pedagogical device. It explores how the normalizing conventions of classical Hollywood cinema and 1940s psychiatric discourse combined over the course of several films to assert both that U.S. women were particularly susceptible to mental illness and that the quintessential mental illness patient was female. In so doing, these films offer a powerful lesson in the historical uses of gendered psychiatric discourse.

This paper reads the texts and reception of a set of films to explore how Hollywood and the psychiatric profession established a compromise between the demands of classical cinematic narrative and psychiatric discourse. Early films such as *Shock* (1946) and *Now, Voyager* (1942) presented tentative first steps in the nascent genre of the mental illness film, and both establish clearly the normalizing function of psychiatric discourse. In addition, both take the female mental patient as their focus, implying throughout that the women of the era teeter perilously on the edge of mental stability. However, their deployment of psychiatric discourse seems not to fit with the narrative expectations of Hollywood cinema. In addition, psychiatric interpretations of these films found them lacking; they were considered to be amateurish, naive, foolish even bad medicine. It is not until psychiatrists and Hollywood joined forces that these problems were solved. The result of this collaboration, *The Snake Pit* (1948), is the quintessential mental illness film. An example of a powerful interdiscursive text about gender and mental illness, *The Snake Pit* combines the lessons of psychiatric discourse and mass culture. This popular and critical success presents an enticing cinematic narrative that teaches an entertaining lesson in psychiatric notions of gender, health, and "normal" heterosexual identity. In so doing, *The Snake Pit* encourages viewers to identify as mental illness patients, and to understand themselves within the normalizing discourses of post-war psychiatry.

Session 10C: Teaching Science, Technology and Culture: Curricular Transformations and Other Transdisciplinary Adventures [Roundtable Discussion](*Brookwood Room*)

- Anne Balsamo, Georgia Institute of Technology
- Richard Grusin, Georgia Institute of Technology
- Ken Knoespel, Georgia Institute of Technology
- Rebecca Merrens, Georgia Institute of Technology

Session 10D: Feminist Methods for Difference: Theory and Practice (*Fulton Room*)

Chair: TBA
Organizer/participant: Johanna M Smith, Bowdoin College

This panel will center on Susan Hekman's paper, "A method for Difference: Feminist Methodology and the Challenge of Difference." Hekman uses Weber's concept of the ideal type in order to theorize a feminist methodology for the social sciences, a methodology that can help us to understand and eradicate the specificities of women's oppression even though it may elide differences among women. The panel's remaining three papers use elements of Hekman's theory to analyze issues of difference in representations of/by women active in eighteenth and nineteenth-century science and twentieth-century technology. In her paper on the autobiography of eighteenth-century astronomer Caroline Herschel, Carolyn Barros analyzes both the differences in Herschel's constructions of herself and the historical changes in scientific practice implied by those differences. Johanna M. Smith tests Hekman's "method for difference," specifically its advocacy of simultaneous short-run and long-run strategies for feminist social change, by examining the contradictory effects of several actual and fictional feminizations of medical science in 1890s England. In the panel's final paper, Anca Vlasopolos analyzes a technology and erotics of difference in three late twentieth-century texts, the appearance of the cyborg/android as perfect lover in two movies and Marge Piercy's *He, She, and It*, Vlasopolos argues, functions to critique a dominant and normative masculinity.

A Method For Difference: Feminist Methodology and the Challenge of Difference; Susan Hekman, University of Texas - Arlington

The prominence of the issue of difference in contemporary feminism has raised a serious methodological problem for feminist investigations. If feminists abandon unitary general concepts, particularly that of "woman," and focus instead on the plurality of differences between women, will they at the same time obviate the possibility of meaningful analysis and social critique? Several prominent feminist theorists have argued that we should return to universal concepts that can provide a solid foundation for theory and practice. I argue for a middle ground between the reinstitution of universal concepts MB the surrender to infinite differences. Employing Weber's concept of the ideal type I argue that it is possible to construct analytic concepts that examine particular aspects of social reality without succumbing to either the temptation of totalizing theory or the endless discussion of differences.

Puppy-Dog, Doting Aunt, and Tool: Putting Caroline Herschel's Images of the Self to Work; Carolyn A. Barros, University of Texas - Arlington

In *Sexing the Self* (1993) Elispeth Probyn argues that one of the ways that feminists can deal with the methodological problem of difference is to "put the self to work." Probyn contends that the images of self that women construct in their discoures can be used to further the project of cultural studies as they distinguish among women at certain moments in their histories. For autobiography, in particular, these constructions of self become "ways of 'expressing *ourselves*' for individual women in specific situations." Spoken or written in the urgency of the moment, these images are of geographically, culturally, and socially distinct selves that allow for insight into the "construction of particular conjunctural social moments."

In this presentation I will argue that the autobiographies of female scientists offer constructions of the self that can be "put to work" to explore various "patches" of the social reality of science. In particular, I will examine the autobiography of Caroline Herschel, the eighteenth-century English/German astronomer, and argue that while Herschel's images of self -- "well-

trained puppy-dog," "doting aunt," and "tool" -- offer a distinctive (different) view of Herschel, if we put these images "to work" for cultural studies, we have a means of analyzing a "patch" of the social reality of eighteenth-century English science as practiced by the middle class. In Probyn's terms, Herschel's imaging of her scientific self is a point of view that can be used to analyze facts that the images have in themselves brought forward.

Nurse Hilda, Dr. Janet, and the Kenealy Sisters: Feminizations of Medical Science in 1890s England; Johanna M. Smith, Bowdoin College

In her paper for this panel, Susan Hekman outlines a two-pronged strategy for feminist methodology--a short-run strategy of analyses couched in terms both familiar and acceptable to hegemonic masculinist discourses, and a long-run strategy of analyses which destabilize those discourses. My paper takes off from this "method for difference" offered by Hekman, to analyze the extent to which 1890s feminizations of medical science operated according to such a doubled strategy. My texts are *Hilda Wade*, a serial written by feminist Grant Allen in 1899 and featuring a nurse-New Woman heroine; *Dr. Janet Harley Street*, a novel written by Dr. Arabella Kenealy in 1893; and the medical lives and writings of Arabella and her sister Annesley, a nurse as well as a journalist and suffragist. As New Women entering the medical profession, all four of these figures might be said to exemplify a long-run feminist strategy, to destabilize male-dominant discourses and institutions. Yet insofar as *Hilda Wade* and *Dr. Janet of Harley Street* echo white-dominant racist and imperialist discourses, they shore up those discourses; and in their medical writings the Kenealy sisters similarly enact a problematic feminism by their advocacy of eugenics. Hekman concludes her paper with the provocative suggestion that "perhaps *only* the master's tools, can dismantle the master's house." My paper will explore how these four New Women medical professionals of the 1890s used the master's tools, and what this historical example can tell us about the effectiveness as well as the limitations of 3 feminist methodology of difference.

Technology as Eros' Dart: Cyborgs and Androids as Women's Perfect Lovers in Late-20th-Century Fantasies; Anca Vlasopolos, Wayne State University

Using Donna Harraway's "Manifesto for Cyborgs" as a theoretical point of departure, I will be examining Marge Piercy's novel *He, She. and It*, Susan Seidelman's film *Making Mr. Right*, and Peter Atkins and Tony Randel's "The Leda" sequence in the film anthology *Inside Out* (Playboy Productions). The cyborg/android as an improvement on nature for the purposes of erotic satisfaction is at least as old as the Pandora and the Galatea myths, not to mention the Rabbinical and Jewish-folk traditions of Eve a an improved model of Lilith. More recent variations on the them include *The Stepford Wives*. etc. My analysis will, however, center on the destabilizing of gender and on women's rather than men's, erotic needs and power in our fin-de-siècle fantasies.

The contemporary representations of cyborgs, as opposed to "natural" men, begin to question the universal, unrepresentable, unnamable normality of Western meta/physics and living sciences--white, Northern European. Christian, bourgeois, heterosexual maleness. Against the problematics of "real" sexual relations either in the present (*Mr. Right*) or in two differently imagined futures, both publicly dystopian and privately utopian (*He, She* and "Leda"), we are treated to an improved model of rnasculinity, one that exists outside the Law of me Father not only in its escape from family "romance" Western-style but, more importantly, from socioeconomic and political molding of either late capitalism or an exacerbated patriarchy of the future.

Since the equation woman=nature has been thoroughly refigured in Western metaphysics and art, we need to pay attention to the transgressive representations of the Fantastic, in which technology becomes the ultimate sexual device for women's erotic satisfaction. Moreover, we need to note that the appearance of the cyborg/android as ideal lover not only surfaces in texts authored by both men and women, but becomes a construction that questions the very notion of normative masculinity. Both the androids of *He, She* and *Mr. Right* and the cyborg of "Leda" become perfect partners through a process of demasculinization, in which women are active, even if covert or

unintentional, partners in the "genetic" or "social" programming/creation of the ideal man. This partnership, which should he merely a replication of the genetic and parental "shares" in biological manhood, functions in these fictions as a critique and a subversion of the formation of dominant masculinity.

Session 10E: Readings and Mediated Performances (*Georgia Room*)

A Computer Multimedia Exploration: An Objective Component To Esthetics? Hale Chatfield, Hiram College

Chair: Marjorie Luesebrink, Irvine College

The presentation will show excerpts from and describe the background and development of Hale Chatfield's computer multimedia feature-length poem "M(other)."

Richard Powers' 1991 novel *The Gold Bug Variations* is largely based on a thesis that J. S. Bach's *Goldberg Variations* are constructed architectonically on the same base as DNA. If this is true, it suggests a fascinating corollary: that the appreciation of beauty in the arts may in some cases arise from our unconscious recognition of a structural kinship between certain artistic creations and the very stuff of which we ourselves are composed. That is, the esthetic sensibility may have an objective component.

Bach's *Goldberg Variations*, finished in 1742, consist of thirty variations bracketed by a repeated "aria" which announces Bach's musical theme: a simple melody in G Major. Each variation bearing a number divisible by three is a canon (except for Variation 30, the last, which is a "quodlibet" based on two German folk-songs). Each of the canons is followed by a dance structure, and each of these is followed by a toccata--an ingenious improvisation which is sometimes light-hearted or humorous.

Bach's *Goldberg Variations* were composed for clavier--a keyboard instrument in wide use during the early eighteenth century. Hale Chatfield's 1995 synthesizer transcription of the pieces both "interprets" them respecting their moods or attitudes and re-orchestrates them using computer wave form technology. Chatfield's *M(other)* is a multimedia poem which takes about an hour and a quarter in presentation. In it, the eight notes of Bach's scale have been arbitrarily ciphered as simple English words which carry denotative "meanings" which impinge upon our consciousness of ourselves as a community of living creatures. In this arrangement, the scale "do ti la sol fa mi re do" becomes "now you are where life always is now." When in *M(other)* these eight words appear in patterns, their arrangement corresponds in some manner to Bach's treatment of his musical themes.

Poetry and the Technology of Hypertext: *True North*; Stephanie Strickland, Independent Scholar/Poet

This presentation will explore the use and meaning of hypertext software in the composition of True North, a volume of poems forthcoming both in print and as a hypertext on disk (Univ. Notre Dame Press, Eastgate Systems). The Focus will be on those aspects of the hypertext which have no counterpart in print: patterns of connectivity, structures that anchor emblematic maps, and onscreen readings experiences more radically individual and more adventurous than page reading.

Romancing Cyberspace: The Narrative of Califia; Marjorie Luesebrink, Irvine College

The promise of hypertext as a story-telling medium was first demonstrated by Michael Joyce in his *Afternoon, A Story*. Since that debut, a number of hypertext authors have explored the possibilities of electronic narrative. At the same time, advances in technology have continued to encourage new strategies and inventions in storytelling technique. Joyce's newest work, *Twilight*, goes far beyond the model of text distributed into hypertext. In this work, as in other new hyperfiction, the reader acquires knowledge from graphics, audio, animation, and video. The combination of media produces a radically different environment for the framing and discovery of traditional novel elements. The story is no longer "carried" by the text but by the context. In hypermedia narratives, we find that tone, texture, mood, style, and metaphor are present not only in the text but in the

other media. Moreover, the structure of the hypertext, its topological and talismanic elements, are primary sources of meaning.

This presentation will illustrate narrative strategies used in selected, fully integrated hypermedia fiction. In, Califia, for example, the opening of the narrative echoes features of the "quest romance," with visual aspects of the text designed to evoke a familiar structure as a way of creating a topological orientation. Its interactivity includes not only hotwords and "linked" paths through the lexia, but also active maps and menus, hidden story wells, recurring iconic navigation prompts, and a traveling clip-board. Three characters collaborate in telling the story, and each narrator is signaled by an associated cluster of visual and audio clues. Choreographic images announce margins of movement for the reader. In choosing a "reading path" through the novel, each participant constructs an assemblage of details and plot that will yield meaning. Because of the fluid nature of hypertext narratives, the recognition of useful conventions in electronic narrative is central to our understanding and enjoyment of the reader-writer relationship in electronic storytelling.

Keywords: narrative strategies, visual narratives, multiple characters, hypermedia, hypertext, hyperfiction, interface, hyperlink, graphics, lexia, multimedia, poetry, fiction, theorizing access

The Microbium: Where Men and Microbes Met: Tale the Fourth: The Rosy; Donald J. McGraw, University of San Diego

"Microbes, especially bacteria, have a long and close association with humankind. Many a tale of tragedy or triumph tie men to microbes. A collection of those tales has been gathered here. One might call it historical science fiction--the tales are very real, but the circumstances have been changed to protect the innocent, or the dead, as it often happened." So states the introduction to a collection of such stories. A reading of the fourth of these will be done at this SLS conference. A reading of the first of the series was done at the 1995 meeting of SLS. The current short story, "The Rosy," has taken a famous incident in the history of the City of London in the mid 17th century and woven a tale of men and microbes into it.

Session 10F: Popularization of Science (*Piedmont Room*)

Chair: Katherine Benson, Emory University

Pulp Poetry: The Popularization of Science in Diane Ackerman's *The Planets: A Cosmic Pastoral*; Pamela Gossin, University of Texas - Dallas

In her first book of poetry, Diane Ackerman creates a generic medley in which she combines aspects of popular science writing with the scientific travelogue, natural history, the cosmic voyage and pastoral poetry. She develops a new mode of descriptive astronomy by adapting traditionally female personal, confessional, and emotional modes of poetic expression with models associated with males' nature writing -- the metaphysical conceit, cosmological epic, philosophical long poem, and scientific reporting. Historically dependent upon observation, classification, "objectivity" and "neutrality," Ackerman infuses these forms with the virtues of their supposed vices -poetically heightened subjectivity and empathy.

By utilizing one of the least popular literary forms -poetry -- to popularize one of the most mathematical of sciences -- astronomy, Ackerman challenges both science anxiety and poetry phobia. In the process, she realigns the historical roles of scientific practitioner and popularizer. This realignment presents interesting dilemmas to the historian of popular science. Can poetry popularize science? Can a non-astronomer write popular astronomy? If so, how will a certain subset of the readership -- namely, historians of science -respond to such a literary treatment of science? As a serious contribution to the historical role of scientific popularizers? Or, as an irrelevant aesthetic production of pop culture? An act of generic or disciplinary violence? As "pulp" science?

Keywords: poetics and science; gender and poetics; popularization of science; astronomy and literature; 20th c. poetry.

Pulp Non-Fiction: Shifting Voices in the Popularization of Postwar Physics; Dave Kaiser and Jon Eburne, Harvard University

An exciting window into issues of "big science" in the United States in the post-World War II era comes from the genre of "popular" books about new physics, written by professional physicists. These books, often printed by large New York "pulp" presses and becoming national best-sellers, can be used to trace resonances between shifting images of physics and physicists within a broader American culture. Although the genre of the popular book about physics can be traced at least as far back as the eighteenth century, the medium has hardly been a static one, and significant reconfigurations can be seen even within the past fifty years. In particular, there has been a shift in the narrators' authorial voice: books by George Gamow in the 1940s and 1950s, for example, aim to make the surprising results of relativity and quantum mechanics amenable to a broad audience by clever use of analogies to everyday experience. Nevertheless, as a narrational presence, Gamow-as-physicist appears nowhere in the texts. Richard Feynman's books from the early 1980s reveal a tension in this format: in his series of anecdotal books, recounting the "tales of a curious character," Feynman-as-personality fills the pages, with no talk about physics at all. In his other popular books, such as *QED* (written at exactly the same time), Feynman adopts a more Gamow-styled exposition by analogy, with no trace of anecdotal or autobiographical passages. With Stephen Hawking's *A Brief History of Time* (1988), the pattern again shifts, including much more of a personal narration alongside his use of de-personalized analogies. Finally, in a series of books by cosmologists over the past three years, we see a nearly complete reversal of Gamow's narrative strategy: Books by George Smoot, Kip Thorne, and an in-press manuscript by Alan Guth adopt explicitly autobiographical forms, with details of the physics hanging upon the structuring accounts of their personal experiences as students and scholars.

By exploring this shift in the genre's authorial voice, we can begin to investigate the kinds of decision-making processes undertaken to put a more overtly humanistic face upon the recent academic physics establishment. As Alan Guth's experiences as a "popular author" reveal, the large presses now seem to bank on the "personal" as a sure way to sell books about black holes and big bangs. The purpose of this paper will be to view this shift at least in part as a negotiated exchange between physicists, publicists, and editors, as each camp struggles throughout the postwar period to define the "popular" and the "market".

Cosmic Science: The Virginia Tech Science Fiction Project; Susan A. Hagedorn, Virginia Tech

The Virginia Tech Science Fiction Project (VTSF) is an effort to recover and preserve text and graphic materials related to speculative fiction (SF), including fiction originally published in science fiction and fantasy magazines dating from the earliest periods of 20th-century American and British SF. The first phase of the project is focusing on digitizing materials from the Heron Collection of SF serials in the Virginia Tech Newman Library Special Collections--an extensive collection of over 5,000 issues of 200 different publications dating from 1926 to 1987. Eventually the project will draw from the Heron collection of American SF paperback books, which contains 11,900 volumes dating from 1939 to 1987, and which represents over 95% of the American SF paperbacks published during these years (with over 2,200 authors and editors as well as over 1,000 SF artists).

The first part of this presentation will be on progress of the VTSF Project, including information on how scholars can access the material already digitized. The second part will deal with a smaller project to quantify the scientific content of the stories, letters, and advertisements found in the first issues of Air Wonder Stories (1929) and Cosmic Science Fiction Stories (1941).

Popular Science, Metaphor, and Narrative Voice: David Quammen's Adventures in Island Biogeography; Michael Bryson, Virginia Tech

David Quammen's monumental new book, *The Song of the Dodo: Island Biogeography in the Age of Extinctions* (1996), merges the genres of travel narrative, scientific history, and nature writing, and is the latest in a long and heterogeneous tradition of what I like to call "science on the road." Quammen, a veteran science journalist, takes his readers on a traveling adventure of truly global proportions--we visit Hawaii, Tasmania, Madagascar, the Malaysian Islands, the Manaus "Free Zone" in the Amazonian rainforests, the Galàpagos Islands, the Baja peninsula of California, Guam, and countless other islands (and island-like patches of landscape) around the world. *The Song of the Dodo* is thus an engaging narrative which takes readers to one exotic location after another, as well as a well-researched and detailed introduction to a wide range of current ecological problems--landscape fragmentation, insularization of species, small-population jeopardies, extinction, and ecosystem decay. As we visit island ecosystems around the world, we come face-to-face with unusual (and, in the case of the Kimodo dragon, frightening!) animal species, talk with a number of engaging and adventuresome field scientists, and meet many local inhabitants whose knowledge of the natural world complements and often eclipses that of the ecologists. By interweaving the history of island biogeography--a catchy name for the study of the facts and patterns of species distribution--with a modern-day journalist's ten-year world odyssey, Quammen educates us in the practice of evolutionary ecology, and sounds a timely warning call about the disturbing rate at which so many of the Earth's island species are disappearing.

The scientific travel narrative itself has a long and fascinating history, and is a genre that fulfills the dual function of entertaining home-bound readers with exciting tales of exotic locales and serving as an all-important repository of scientific information. Charles Darwin's travelogue, *The Voyage of the "Beagle"* (1839), a highly popular account of his trip to South America and the Galapagos Islands, is a key exemplar, as well as a historical starting point for Quammen's late 20th-century island travels. But simply observing that the scientific travel genre serves these two

functions begs the important question of how they interrelate. Rather, as one who is interested in the strategies writers employ to communicate complex scientific information to a general readership, I suggest we should look at how the excitement, the surprise, and the wonder generated by the "travel" aspects of a text contribute to its function as a means of scientific education. Along these lines, I propose to analyze the relationship between travel and science in *The Song of the Dodo*, and in doing so, to argue that Quammen's narrative persona--a wry, curious, humble, and scientifically-naive adventurer--is the key textual link between our enjoyment of the travel adventure and our understanding of the theory and practice of island biogeography. The voice of *The Song of the Dodo*, by establishing a tangible, accessible, and unapologetically-subjective point of view, provides readers with a "lens" with which to view the day-to-day dynamics of other cultures, as well as a humorous, no-nonsense, and an eminently entertaining tutor in the abstract world of ecological science.

Saturday, October 12, 7:30 - 8:30 pm: Plenary Session [Reception Follows](*Ballroom*)

Roald Hoffmann: Chemistry Imagined: Delight and Tension in an Art/Literature/Science Collaboration

An image of the art and science of substances and their transformations will be sketched in several vignettes drawn from a recent book by an artist, Vivian Torrence, and the speaker. These will be interspersed with observations on the sources, visual, literary, and scientific, of such a collaboration (such as emblem books), where the context of juxtaposition leads, and how text and image, mystery and clarity, fared in this collage of a collaboration.

Roald Hoffmann, Professor of Chemistry at Cornell University, holds many scientific awards, including the 1981 Nobel Prize in Chemistry, presented for finding rules that predict chemical reactions. He is also known for his writing, including scientific works, and books of poetry and essays such as *Gaps and Verges* (Orlando: University. of Central Florida Press, 1990); *Chemistry Imagined: Reflections on Science* (with Vivian Torrence) (Washington, DC: Smithsonian Institution Press, 1993); and most recently, *The Same and Not the Same* (New York: Columbia University. Press, 1995). He is a long-standing member of SLS.

Saturday, October 12, 9:00 pm - onwards: Music and Dancing SLS Style (*Ballroom*)

Sunday, October 13, 8:30 - 10:00 am: Session 11

Session 11A: Late 19th Century Science (*Ansley Room*)

Chair: TBA

The Romance of Science: Perfection in the Garden; Lisa Schneider and Christiana Hopkins, Columbia State Community College

Both Mary Shelley and Nathaniel Hawthorne contribute to the fiction of science in the nineteenth century in their own ways, yet there are parallels, perhaps because of their own gender identities, that can be drawn between these two Romantics. In *Frankenstein*, Shelley narrates the doctor's attempt to create without woman, the perfect man. In "Rappaccini's Daughter" and "The Birth-Mark," Hawthorne's scientists don't bother to create the perfect man. Instead, they take the already perfect woman and try to perfect her even more. Of course. all attempts at perfection fail miserably .

As for perfecting humanity, Hawthorne appears to be struggling with two ideologies regarding femininity. Rappaccini's daughter, Beatrice, and Georgiana in "The Birth Mark" are already perfect women for ordinary mortal men. They are ideal women-beautiful, kind, amenable, and true. Yet because each is woman, like the temptress Eve in Eden, each is flawed and will be the downfall of the men in their lives. To counteract Beatrice and Georgiana's inherent evil, they must be re-created in the image of their father-figures. Like Hawthorne's stories. Shelley's *Frankenstein* presents parallels to the Biblical creation. Both the Biblical ambition for knowledge and the Promethean spirit of enormous ambition bring about the destruction of the doctor and his creation. The monster's destruction is also connected to the Romantic concern with isolation and alienation from society. At fault are the egocentric scientists--Dr. Frankenstein, Aylmer, and Rappaccini--whose "creatures?' --Frankenstein, Georgiana, and Beatrice--are alienated, Frankenstein, by his hideous monstrosity, and Beatrice and Georgiana, by their obvious perfection.

Both Shelley and Hawthorne love the romance of science. Shelley predicts the life-giving forces of electricity. Hawthorne regards science as a creative art. like alchemy. Both admire scientists for their imaginative creativity At first, each scientist is able to create a perfect world in his surreal lab, Edens on Earth. However, the scientific ateliers are corrupt and therefore cannot produce perfection. The labs are not adulterated by the introduction of foreign substances (Beatrice, Georgiana, or the monster) but by the huge egos of the scientists. When moral, social, and ethical concerns are divorced from the scientific process, the potential for monstrous disaster is enormous. As both Shelley and Hawthorne point out, mankind cannot return to the Garden; humanity is imperfectly perfect.

Sympathy and Science in *Frankenstein*; Janis McLarren Caldwell, University of Washington

Frankenstein, often cited as the first instance of science fiction, has also been adopted as the classic narrative of the relatively newly defined field of science and ethics. It is no coincidence that Frankenstein's unusual genre-mixing an early version of scientific realism ("The event on which this fiction is founded," writes Percy Shelley in his preface to the first edition, is "not of impossible occurrence") with the gothic German ghost stories that inspired the famous ghost story contest that engendered *Frankenstein*--is a product of Romantic England. Broadly speaking, England in the early nineteenth-century saw the confluence of a materialist scientific tradition from France and the idealist *Naturphilosophie* from Germany, creating the poles of a controversy about the nature of human life: are we merely machines or powerful souls in charge of our bodies? The brilliance of Frankenstein is in its demonstration of a similar flaw underlying both poles of the

controversy, and in its passionate argument for the suspension of too easy a philosophical or scientific resolution of the ethical tangle it narrates.

Shelley's ethical critique revolves around definitions of sympathy. In the world of *Frankenstein*, sympathy is both a natural, physiologic principle and the highest goal of social interaction. Physiologic sympathy, however, leads to illness in this novel, and social sympathy, however strongly desired, is fragile and nearly always frustrated. Shelley critiques both Romantic science and the Romantic ethics of sympathy, which she depicts as similarly narcissistic reductions, impatiently and prematurely synthetic, and therefore brittle in their expectations of universal similitude, harmony, and resolution. Her narrative is a heuristic, however, for a different kind of sympathy, that exercised by a reader or listener, which, in contrast to the sympathetic identification sought by the characters in this novel, accommodates disjunction and difference. Shelley persistently employs auditory metaphors for this redefinition of sympathy. Sympathetic listening in *Frankenstein*, or straining to hear what one cannot see, counters several of our still current assumptions about sympathy: It does not happen naturally, but only through extraordinary exertion. It does not involve identification, but rather makes room for difference. Finally, an ethical and accurate science requires this newly refigured "auditory" sympathy in addition to those analytical skills of observation usually figured as optical.

Keywords: medicine, ethics, Frankenstein, Romantic science

Edgar Allan Poe's "The Gold-Bug": Detection and the Historical Imagination; Lawrence Frank, University of Oklahoma

In "The Murders in the Rue Morgue" (1841), Edgar Allan Poe introduced his fictional detective C. Auguste Dupin, and a universe paradoxically governed by chance and necessity. As a meditation on Pierre-Simon Laplace's nebular hypothesis, with its description of the evolution of the solar system, the story pointed to the contingent nature of the universe and to the possibility that all human knowledge is, at best, historical and conditional.

The full implications of this perspective were not developed, as one might expect, in "The Mystery of Marie Roget" (1842-43) or "The Purloined Letter" (1845), but in "The Gold-Bug" (1843). Here, William Legrand, another misanthropic eccentric, appears to dramatize the reconstructive methods of the detective and the conclusions to which such methods lead. As a naturalist, Legrand is influenced by the exploits of Georges Cuvier, particularly as described by William Whewell in his *History of the Inductive Sciences* (1837): in his reconstructions of extinct animals, Cuvier approaches fossil bones "like the decipherer of a manuscript, who makes out his alphabet from one part of the context, and then applies it to read the rest" (3:474). This is the process Legrand follows in examining and deciphering the enigmatic parchment that yields, through accident and human desire, an encrypted message that can be deciphered and that leads both to a buried treasure and to a crime from the past, a crime not even suspected at the story's beginning.

Yet, in creating a context for the text of the cypher, Legrand is not the comparative anatomist, but a philologist like Thomas Young and Jean Francois Champollion both of whom worked on deciphering the Egyptian hieroglyphs. Like them, he is a practitioner of palaetiological science, defined by Whewell in his -History- as a discipline "in which the object is, to ascend from the present state of things to a more ancient condition, from which the present is derived by intelligible causes" (3:481). Legrand models his activity upon philology and archaeology, these disciplines that became implicitly a paradigm for the fictional detective and for the geologist and, later, the evolutionary biologist. Whewell reveals the centrality of philology and archaeology in his -History- through references to Charles Lyell's discussion of the Temple of Jupiter Serapis in volume one of the -Principles of Geology- (1830). Lyell treats the temple ruins as an enigmatic text, offering an epistemological and narratological model for anyone engaged in a narrative reconstruction of the past.

Lyell's tour-de-force examination of the Temple of Jupiter Serapis reveals the conditional nature of historical knowledge. Lyell's discussion provides a context for "The Gold-Bug" and William Legrand's deciphering of the coded message and the recovery of a treasure. What seems to be the triumph of the historical imagination becomes the purely contingent intersection of the human desire for meaning and the accidental discovery of a document that satisfies that desire. "The Gold-Bug" suggests the precarious status of any narrative that reconstructs the past from fragmentary evidence enduring, by chance into the present.

Keywords: Detective fiction, Nineteenth-century science, Archaeology, Hieroglyphics

Sherlock Holmes: The Fantasy of Imperial Immunity; Laura Otis, Hofstra University

In 1890, Sir Arthur Conan Doyle visited the wards in Berlin where Robert Koch's "cure" for tuberculosis was being tested. Koch, who had discovered the tuberculosis bacillus in 1882, had emerged in the international press as a conquering hero, but one who fought his battles under secretive conditions. In the *Review of Reviews*, (December, 1890), Doyle described Koch for British readers in much the same terms he was using for his beloved detective: "somewhere within [those walls] the great mastermind is working, which is rapidly bringing under subjection those unruly tribes of deadly microorganisms which are the last creatures in the organic world to submit to the sway of man . . . [Koch] preserves his whole energy for the all-important mission to which he has devoted himself." Doyle, trained as a physician 1876-1881, learned and practiced medicine during the heyday of bacteriology, and both his Holmes stories and his scientific outlook exhibit the same bacteriological and imperialistic perspective.

As Bruno LaTour and Stephen Arata have argued, the new science of bacteriology in the 1880s is inseparable not only from the desire to conquer new territory, since tropical diseases did far more to check the progress of empire-builders than African or Asian natives ever could, but from the fear that natives of these lands, in a quest for revenge, would ultimately infiltrate and infect the imperial "nerve centers." In addition, as the blank spaces on maps rapidly disappeared, the laboratory provided a new realm for conquest where imperial heroes could unveil, one by one, the microbes that caused many infectious diseases. The very process of expansion, however, left European nations vulnerable to the new germs, mates, and ideas that their soldiers would bring home with them. The empires needed immune systems.

Sir Arthur Conan Doyle (1859-1930), an enthusiastic supporter of the British Empire, brought to life the fantasy of an imperial immune system through his character Sherlock Holmes. The British loved Holmes for the same reasons that Doyle admired Koch: he devoted all of his formidable mental powers to identifying and neutralizing living threats to society. Holmes fights this battles much as Koch did, by unmasking tiny interlopers who had invaded the imperial city. Lawrence Rothfield sees in Doyle's detective stories a new tendency to "identify in order to exclude." Holmes' calling consists largely of detecting foreign thieves, tyrants, intelligence agents, counterfeiters, women, drugs, and diseases that have worked their way into British society, and his cases frequently involve either blackmail or counterfeiting, two crimes that threaten to destabilize traditional sign systems by which worth and identity are established. All too often, a "respectable" gentleman who won his fortune in the colonies by questionable means calls in Holmes to preserve his reputation when an old acquaintance he would rather forget tracks him down. "You are a benefactor of the race," a grateful client tells him in "The Red-Headed League." Holmes serves his "race" by trying to uphold a system which established identity and economic worth through heredity, even as his clients were drawing their wealth from other races in other lands. In the age of imperialism, it is a losing battle.

Keywords: Germ Theory, Bacteriology, Imperialism, Arthur Conan Doyle, Robert Koch, Immunity, Counterfeiting, Detective Fiction, 19th-Century British Literature

Session 11B: Post-Deadline and Alternate Time Session (*Ardmore Room*)

Session 11C: Scientific Discourse as a Means of Narrative in John Fowles' *The French Lieutenant's Woman* (*Brookwood Room*)

Organizer C. Jason Smith, University of Arkansas

Each of the four papers takes a different approach to the interpretation of Fowles' text based upon the different types and modes of scientific discourse which appear directly in the text (conversations, authorial discourse, etc.) or which are alluded to through header material and footnotes.

In "Testing the Wor(l)d: The Method as Narrative Discourse *in The French Lieutenant's Woman*," T. Howell Cox explores the connections between M. M. Bakhtin's work on narrative discourse and Foucault's writings on scientific discourse as analogous ideas, particularly within the context of a postmodern novel like *The French Lieutenant's Woman*. The most global paper of the four, Cox's paper serves as frame and introduction to the other three, more specialized, papers.

Sandra Petree's "Cultural Geography and *The French Lieutenant's Woman*" explores the relations between the characters, their physical environments, and the cultural landscapes of the novel. Ms. Petree's arguments center around the proposition that *TFLW* can be considered as an artifact of cultural landscape whose result is revelation of Victorian England with specific attention to one small region of physical environment. The narrative voice in *TFLW* intentionally and self-consciously creates an episode of sequent occupancy which overlays and permeates time from pre-history to the modern, with focus on mid-nineteenth century Lyme, England.

C. Jason Smith's "The Baby Box: Popular Physics and Bodies in Motion in Fowles' *TFLW*" explores the references in *TFLW* to post-nuclear physics such as works of "popular" physics like Martin Gardner's *The Ambidextrous Universe* as a means of discourse on the body. Smith argues, in effect, that Fowles' knowledge of contemporary, albeit popularized, theoretical physics frees his narrative from traditional approaches to "the body" as a single space-time event. The multiple endings, then, represent no so much an innovative narrative technique as an appropriation of the discourse of science to free the feminine body from that self-same discourse.

Cultural Geography and *The French Lieutenant's Woman*; Sandra Petree, University of Arkansas

Cultural geography is an academic discipline which focuses on understanding of relationships between people, their physical environments, and their cultural landscapes. Geography was defined by Immanuel Kant as "the study of spatial patterns--that is, the differences and similarities between one region and another" (quoted in Jordan and Rowntree 2). Cultural geography extends that definition to an organization of five thematic emphases, three of which are significant to this discussion. They are Geography of Place, which includes study of cultural traditions and physical landscape characteristics; Geography of Location, which deals with specific and relative regional positioning; and Environmental Interaction, or Cultural Ecology, terms referring to a two-way interaction between an organism and its physical environment.

The French Lieutenant's Woman can actually be considered an artifact of cultural landscape whose result is revelation of Victorian England with specific attention to one small region of physical environment. The narrative voice in *FLW* intentionally and self-consciously creates an episode of sequent occupancy which overlays and permeates time from pre-history to the modern, with focus on mid-nineteenth century Lyme, England.

The narrator of *FLW* creates a scientific modus operandi and assumes the role of scientist observing specimens as he discusses and debates the existences of his characters. In Chapter 13

the narrative voice overtly scrutinizes his own writing endeavor; elsewhere other geographic and scientific methods (not to mention geologic discourse) are employed as literary devices. For example, Sarah Woodruff, the female protagonist, is identified for the reader not primarily through dialogue or descriptive action, but through association with the wild physical landscape of Ware Commons as contrasted to the artificially constructed Victorian cultural landscape. Ware Commons is also presented by the narrator as a rich repository of geologic fossils, and by this tripartite association (Sarah, fossils, Ware Commons) Fowles reveals Sarah as a specimen organism under his scrutiny in her cultural environment. "The cultural landscape [artificial] is our collective and revealing autobiography reflecting our tastes, values, aspirations, and fears in tangible forms," said Paul Vidal de la Bleche (quoted in Jordan and Rowntree 25). Sarah, the fossils, and the conscious introspective narrative voice produce a geographic map of sequent occupancy, necessary for cultural geography because ". . . culture is time conditioned and cannot profitably be studied devoid of its temporal dimension" (27).

This book becomes a study of Sarah/organism and her relationship to her physical environment (Lyme and Ware Commons) and her cultural landscape (Victorian England). Fowles's well-known methodology also draws readers into the geographical construct and thereby ingeniously continues the time-layer sequence, extending the book's reach to future generations like geologic layers added in patterned substrata.

Also worthy of mention is Fowles's use of obvious geographical regional culture biases and stereotypes (city/country, England/France, upper/lower classes) which enable him, without verbiage, to convey significant information by assumed association in reader understanding. *FLW* is thus both a means of explicating cultural geography through literature and of drawing on assumptions of vernacular cultural geography to create literature.

Anne-Marie Thomas' "Hysterical Imagings: Medicalization, the Body, and The French Lieutenant's Woman" explores the medical references in TFLW, paying particular attention to the use of medical discourse as a means of characterization. Her arguments are influenced by the following: M. Foucault's *Order of Things* and *Birth of the Clinic*, Elain Scarry's *The Body in Pain: The Making and Unmaking of the World* (1985), *The Dialogic Imagination* (1981) by M. M. Bakhtin, *Simian, Cyborgs, and Women* (1991) by Donna J. Harraway, and other medical texts reference in *The French Lieutenant's Woman*.

The Baby Box: Popular Physics and Bodies in Motion in John Fowles' *The French Lieutenant's Woman*; C. Jason Smith, University of Arkansas

In this paper I explore the references in *TFLW* to post-nuclear physics--such as works of "popular" physics like Martin Gardner's *The Ambidextrous Universe*--as a means of discourse in the novel. I argue, in effect, that Fowles' knowledge of contemporary, albeit popularized, theoretical physics frees his narrative from traditional approaches to "the body" as a single space-time event. The multiple endings, then, represent no so much an innovative narrative technique as an appropriation of the discourse of science to free the feminine body from that selfsame discourse.

The first site which I will examine is the one biological procreative act of the novel. When Charles Smithson has sex with Sarah Woodruff in Exeter there are presumably two biological outcomes which we may foresee: Sarah will get pregnant or not. Miraculously, Charles seems not to consider the possibility of engendering a child there despite his previous amorous adventures in Europe. In either case Sarah will either have a baby or she will not. From this perspective, the two endings could represent the two possibilities of this joining (baby, no baby), possibilities also tied to (if the author-narrator may be believed) in the flip of a coin and the movement of one gamma ray particle. But where, and why, does that gamma ray particle move? And, what does it have to do with the two endings to *The French Lieutenant's Woman*? One answer seems to lie with Erwin Schrödinger, who first postulated nuclear movement as both particles and waves (hence, gamma ray particle), and a metaphorical cat (Gleick, *Genius*). My first proposition, then, is that "Schrodinger's cat" and the multiple endings of *TFLW* are mutually supporting mataphores.

Scientific Discourse as a Means of Narrative in John Fowles' *The French Lieutenant's Woman*: Session 11C
Sunday, 8:30 - 10:00 am; Brookwood Room

Like a true Victorian, Fowles opens Schrödinger's box in the first and commits himself to one reality--"lalage's come; aye / Come is she now, 0!" John Fowles has the tradition to back him up on validity, the *rightness* of a linear text which concludes with the child Lalage's appearance. On the other side of the coin, his sensibilities are post-nuclear and post-modern which firmly commits him to uncertainty--or , at least places him in the grips of it. The author-narrator-timekeeper makes amends with his sensibilities by putting the metaphorical cat back in the box where it now belongs, demonstrating the fallacy of Chapter 60 that the box can be opened and reality is knowable. The ending portrayed in Chapter 60, then, is a lie (like Charles' fantastical construction in Chapter 44). The tragic ending, the one appropriate to Sarah (or, Tragedy), the real and true ending for the post-modern sensibility, is the uncertain ending. Charles, Sarah and, subsequently, the reader is not allowed the certainty of the Victorians. Fowles finds piety in "acting what one knows" (61) puts uncertainty back in, puts Lalage back in, and slams down the lid rejecting even the duality represented by the coin toss--baby or no baby--becoming instead a god-like gamma ray particle which travels both forward and backward in time within the box killing and not killing the cat infinitely.

Finally, I will argue that Sarah engages in a self-conscious act of appropriation, drawing to her "self' all that the French Lieutenant represents. She draws upon herself all the masculine texts represented by Varguenness, Charles, Grogan, Darwin, and the others, pulls the paradoxes into her body, into her womb, and compacts them so tightly that the final revelation to Charles in Exeter causes them to explode and fall apart like Pynchon's Bad Priest (*V*) who breaks up into a series of images. And the children cry "It's a lady" (320). Sarah thus self-consciously reveals herself a fiction, as all women are fictions outside of masculine discourse--in fact, there is no "outside" of masculine discourse, the void created by Sarah being inside. The same daisy chain of theory that created the Idea of "womb" (symbolized by the daisy-chain in "the garden below") hypothesizes the "hysteria" that Charles cannot apply to Sarah. "The French Lieutenant's Woman" does not exist because "woman" does not exist. In a final, self-conscious acts as narrator, Fowles engenders the conditions where we may see that Sarah willfully remove from herself all phallogocentric constructions of her body. "I think I have a freedom that they cannot understand. Because I have set myself beyond the Pale. I am nothing, I am hardly human anymore. I am the French Lieutenant's Whore" 1175). Sarah becomes a space, uncertainty, being and non-being, quantum, 0/1, a repository of the primal unformed matter of chaos, pure light.

Hysterical Imagings: Medicalization, the Body, and *The French Lieutenant's Woman*;
Anne-Marie Thomas, University of Arkansas

In this paper I will examine in detail the extensive references to medical texts in John Fowles' *The French Lieutenant's Woman*. Specifically, I will examine the medical discourse in the novel--in discussions between Dr. Grogan and Charles Smithson, textual references to specific sources, and footnotes from the author--as a means of narrative discourse.

My first proposition is that Fowles, via the dialogs of Dr. Grogan and Charles Smithson, consciously utilizes 19th medical discourse *in an attempt to analyze the character of Sarah Woodruff (aka The* French Lieutenant's Woman). This discourse operates on two levels: 1) the author tests the character of Sarah Woodruff against the episteme which he constructs from historical texts from the perspective of narration tie. from the "outside"), and 2) Dr. Grogan and Charles Smithson engage In diagnostic imaging of Sarah Woodruff from their own knowledge of diverse scientific texts.

Second, I will propose that Fowles' own Postmodern sensibilities in many ways serves to thwart his characters' diagnostics of Sarah Woodruff. In essence, his intrusive, self-consciously twentieth-century, scientifically literate narrative voice cannot but help contextualize his own characters' discursive acts as failed hypotheses.

My final argument will further examine the character of Sarah Woodruff as a self-conscious subject of scientific discourse who continually modifies her behavior to a) initially meet the expectations of observers, and then once these expectations have been met to b) alter her own characteristics. The character of Sarah Woodruff, then, represents the potential for the object of observation to willfully alter the relationship between observer and observed.

The following is a short list of critical texts which will serve as basis for my presentation: Michel Foucault's *The Order of Things* (1970) *and History of Sexuality: vol 1* (1978), Elain Scarry's *The Body in Pain: The Making and Unmaking of the World* (1985), *The Dialagic Imagination* (1981) by M. M. Bakhtln, *Simian, Cyborgs, and Women* (1991) by Donna J. Harraway, and other medical texts referenced in *The French Lieutenant's Woman*.

Session 11D: Idealizations: Theology and Science (*Fulton Room*)

Chair: Ronald Bogue, University of Georgia

Bird Flight, 19C Poetry, and the Invention of the Flying Machine; David K. Vaughan, Air Force Institute of Technology

Not surprisingly, early aviation pioneers based their fundamental aeronautical designs on the study of the flying habits of birds. Pioneers such as Cayley, Stringfellow, Pettigrew, Lillienthal, Chanute, and the Wright brothers devoted hours to the study of bird flight and the physics of airflow across the wings of birds. The notebooks and journals of these men are filled with numerous sketches and drawings of birds and bird wings in various phases of flight, and their notes describe bird movement and behavior.

There were a number of historical precedents for this approach to solving the problems of manned flight. Leonardo da Vinci's sketches of birds and flying machines clearly established the mode for such an approach. But contemporary poetry seems to have influenced the ways in which the 19th century pioneers interpreted the movement of birds and the ways in which those movements might be artificially articulated. Romantic poetry, especially in the poems of Shelley and Keats, emphasized the spirit of flight, indirectly suggesting that exact imitation of bird flight would lead to successful manned flight. Aeronautical pioneers like Cayley in England and Lillienthal in Germany carefully studied specific bird types, believing the answer to manflight lay in direct imitation of wing design and movement. However, initial flying or gliding devices based on bird designs were inefficient and unsuccessful.

Human flight was achieved as a result partly of evolutionary steps in design but primarily of the re-interpretation of the principles of bird flight. The Wright brothers' successful flying machine was the result of a new approach to interpreting the motion and imitation of bird flight. Their radical approach to traditional flying machine design was mirrored in the modernist trends in culture and poetry.

Keywords: birdflight, flying machines, 19C poetry

Science and Religious Faith; J. Roger Osterholm, Embry-Riddle Aeronautical University

The focus is especially on the popular imagination in relation to major ideas of science and faith. Determinism is nearly 200 years old and is yet a major popular notion. It is a major deterrent to a belief in a divine being or Creator inasmuch as it has suggested that events are all natural and mechanistic. Free will tends to be nudged aside, and free will is a major element of religious faith. Nevertheless, major scientific theorists and other notable thinkers, like Bertrand Russell, Alfred North Whitehead, Albert Einstein, William James, Elton Trueblood, Stephen W. Hawking, Waiter Lippmann, Emst Cassirer, J.W.N. Sullivan, Jacob Bronowski, Fritjof Capra, Allan Bloom, Peter B. Medawar, O.B. Hardison, Jr., Paul Davies and many others have stated that faith is reasonable or at least socially necessary. Representative statements on faith by these major figures in science and other thinkers will be surveyed for their bearing on faith in the modem world of advanced science. Heisenberg's Uncertainty Principle and Einstein's Theories of Relativity will be related to the problem of faith, showing that the door to faith remains a reasonable option to serious thinkers. The advanced attempts in physics to develop a Unified Field Theory also come close to allowing, even recommending, religious faith. The conclusion is that religious faith remains a reasonable position in modem thought.

Interfacing with Science: The Fashioning of John Updike's *Roger's Version*; Edward Vargo, Assumption University

Science appears as regularly in Updike's body of work as sex, religion, and art. He incorporates scientific concepts directly into his narratives and dialogues. He uses the sciences for stylistic purposes, for the structure of a specific work, or for the overarching vision of an entire piece. A survey of all his writings indicates that throughout his career Updike has most frequently invoked medicine, the physical sciences, and the biological sciences, in that order.

This incorporation of scientific materials came to a kind of culmination in *Roger's Version*, the quadrilateral story of a doubting theology professor, his unhappy wife and niece, and a computer hack who hopes to prove the existence of God through computer graphics. The process through which Updike worked concepts and images of computer science into this story is fascinatingly revealed in his working papers, which I have examined at Harvard's Houghton Library. This present paper provides a detailed record of the false starts, erasures, shifting versions, and ongoing discussions with an MIT scientist that led to the final text of this novel.

A Month of Sundays signaled a breaking away from the direction of Updike's early writings into a secular, postmodern world circumscribed by language. *Roger's Version*, written at a time when literary critics were accepting more and more a relativistic postmodern world, takes up the counter-movement of scientists looking for a unified answer to the universe in the new cosmologies, even as some positivist certainties of science were crumbling. Moreover, with the linking of theology and science, *Roger's Version* seems to be searching for an entry into some next phase, "after postmodernism," just when it was very much in the ascendancy.

Session 11E: Inside and Outside: Reflections on Cultural Studies of Science (*Georgia Room*)

Chair: Gary Willingham-McLain, Carnegie Mellon University
Organizer: Phoebe Sengers, Carnegie Mellon University

Inside/outside distinctions abound in many analyses of culture and science, where observers from the `outside' comment to each other on the activities of those `inside' science. This very stance is at odds with the tenets of cultural studies, which aims to reverse the specialized foci and cross the boundaries of traditional disciplines in order to provide understandings of the interrelatedness of all cultural phenomena, and in particular their relations to larger social structures and processes. One of the express goals of cultural studies of science as we see it is to make positive changes in the scientific practices that are studied by making scientists aware of the role of the social within their labor and of the functions their work plays within the world-at-large. `Outsider' discourses, for evident reasons, have a harder time being communicated to scientists and incorporated into scientific practice than `insider' ones. Yet by remaining on the margins of science rather than acting within science, by constructing discursive boundaries between the practice of science and the practice of criticism, cultural studies of science undermines its ability to make positive changes in the scientific sphere, and even to communicate its concerns to the scientific community. The adherence to an 'outsider' stance, the raising of a boundary between 'cultural commentator' and 'scientific producer,' not only goes against the epistemological grain of cultural studies, but it is also unproductive for both parties and, finally, self-defeating for the critical community. We propose that those interested in cultural studies and science take seriously three related tasks, not necessarily in the following order: theorizing what a cultural studies of science aims to be, thinking through the pragmatics of taking cultural studies to the sciences and, most importantly, the task of actually engaging science, rather than merely commenting on it.

In this panel discussion, Richard Davis, Gary Willingham-McLain, and Phoebe Sengers will each give a short presentation of their own approach to the problem of cultural studies and science within this context. David Shumway will then appear as the voice of the opposition. After this we will open the floor for questions, other viewpoints, heated debate, food fights, etc. Our goal is to stimulate discussion about the role of cultural studies and whether and how it should seek to affect the sciences and other practices which it studies.

Thinking Science through Critical Theory and Cultural Studies; Richard D. Davis, Carnegie Mellon University

No matter what the cultural studies of science may at present be, it is apparent that it has no coherent method or agenda. Cultural studies in the American scene, and particularly the cultural studies of science, has become not so much a mode of study as a catch-all phrase increasingly denoting work produced by non-scientists about science. Yet cultural studies in the American academy has roots in two rich, dovetailing traditions, the Frankfurt and Birmingham schools of cultural analysis. Considering the work of cultural studies of science in the light of past work of critical theory and cultural studies, we can see the cultural study of science not so much as a mass of scholarship arrayed around a common object but as part of a relatively coherent critical movement. While admittedly there is a certain attraction to the idea of 'science studies' proliferating throughout the disciplines and media, I propose to consider how the cultural study of science can be informed by its critical predecessors to become a more focused and potentially more significant mode of study that resonates both outside and within the institutions of scientific production. My task, then, will be to consider how past critical movements of cultural analysis reflect upon both science and recent science studies work, and through that to consider what a cultural studies of science may indeed be,

which is to say not so much a collection of studies and digs clustered about a privileged object but something more akin to a labor theory of science that seeks to locate science, for scientists and non-scientists alike, within a world of production and concern.

Tracing Networks and Reading Hegemony; Gary Willingham-McLain, Carnegie Mellon University

Bruno Latour argues that science studies must abandon critique in its ongoing effort to analyze and make a difference in scientific practices. This paper will examine Latour's argument for "the end of denunciation" in light of his own critical work in tracing networks and identifying hybrids. I will analyze the particular kind of intervention Latour engages in by way of comparing it to cultural studies' method of reading cultural practices as producing and reproducing hegemonic social relations.

keywords: Latour, critique, cultural studies, hegemony

Subjective Technologies; Phoebe Sengers, Carnegie Mellon University

Technology historically attempts to exclude subjectivity, making an oxymoron of the very term `subjective technology.' Here, I will argue that technology does not necessarily imply attempting to achieve objectivity. I will argue that subjective methodologies for building technology can be and have been developed, that subjective technology is a desirable form of knowledge production for cultural studies of science, and that you can build subjective technologies without losing your soul as a cultural critic.

keywords: objectivity, technology, interdisciplinarity

What is Genealogy of Science? David Shumway, Carnegie Mellon University

Science studies, in order to have a *raison d'etre*, cannot be part of the science studied nor itself become a science. Contrary to Latour, I argue that science studies is distinguished by its critical project, and criticism can only be consistently produced by those who are not engaged in or dependent upon the project being criticized. However, science studies cannot claim epistemological superiority to science, and it cannot rest on assumptions that entirely prejudge the issues of its concern. The genealogical method outlined by Foucault recommends itself because it treats knowledge as historically contingent and culturally produced, but does not draw epistemic conclusions from these positions. Under genealogy, science disciplines and other knowledge formations are treated like any other historical phenomena. They are deprived of teleology and of the presumption of truth. But genealogy is not a hermeneutics of suspicion by which science is judged inherently false. In fact, genealogy assumes the possibility of accumulating evidence about its objects of study in order to produce relatively true knowledge. It's arguments, therefore, have the potential to reach science practitioners and science policy makers, though the reality of such reach is always a rhetorical and political question.

keywords: genealogy, Foucault, critique

Session 11F: Post-Deadline and Alternate Time Session (*Piedmont Room*)

Sunday, October 13, 10:15 - 11:45 am: Session 12

Session 12A: Shakespeare Studies: Theater, Knowledge, and Truth (*Ansley Room*)

Chair: Rebecca Merrens, Georgia Institute of Technology

Theatrical *techne* and the illusion of knowledge in Shakespeare's Problem Comedies; Diana B. Altegoer, Old Dominion University

According to Stephen Orgel (in *The Illusion of Power*, Berkeley, 1975), the Elizabethan stage was both a visual and a verbal medium, with the poetic and the spectacular often used for differing, and often antithetical, political and epistemological purposes. The cultural studies of Gramsci, Foucault and Habermas have likewise shown us how certain ideologies (based upon gender and class distinctions) could compete within a single textual space or stage. As such, this paper argues that in his problem comedies (*All's Well That Ends Well, Measure for Measure*, and even in *Twelfth Night*, not usually considered a problem play), Shakespeare is staging a crisis of "knowing" (founded upon the tropes of gender and class difference) in the case of both visual and verbal avenues towards human knowledge of the world. The stage itself (in its "realness," its sense of being a firm location which is ironically premised on the idea of illusion) becomes an arena for demonstrating the artificial (and possibly erroneous) nature of visual and verbal constructions of gender and class. Shakespeare interrogates these truth claims by establishing the inherent tension between *techne* and "nature" [a problematic term in itself], a resistance which seems (in these plays) inevitable given the unreliability of the human senses and the inability of finding "truth" through the disciplines of rhetoric, logic or poetics.

On the Verge of Empiricism--*The Tempest*, the Closed System, and the Assaying of Character; Brian R. Holloway, College of West Virginia

This presentation shows how different views of the world coexist within this transitional play--older images of hierarchy, correspondence, and organic interdependence share the stage with, but are not supplanted by, what we might call a more-recent "prescientific" concept. This second world-view, still a visual one, studies society and character within the metaphor of mathematical equivalence and the image of assaying, or balancing. The Tempest--itself a play about magic deriving from an overtly medieval lineage--is also a play about exploration, veering toward the discovery of "brave new worlds" and venturing towards a new empiricism. Its very rhetoric stands midway between multivalent poetics and an attempt to use language with figurative precision.

Will to Truth: *Othello* and the Empirical Fallacy; John Prince, Ball State University

Upon finishing William Shakespeare's tragedy *Othello*, the reader is left with one disturbing question: "What makes a character like *Othello*, who admittedly does not have a jealous nature, murder his wife in a jealous rage in Shakespeare's tragedy *Othello*?" Some critics, following Aristotelian poetics, have suggested a tragic flaw in Othello's character. Others have focused their critical attention on Iago's evil nature. I believe, in contrast to these perspectives, that the force that sustains the action in *Othello* is his will to truth. Othello becomes convinced that his wife has been unfaithful to him because he erroneously relies on the epistemological assumption that empirical knowledge inevitably leads to "truth." But it is not enough to say that *Othello* provides a critique of empiricism as an epistemology. Indeed, what is at stake in the drama is not **how** Othello searches for truth, but whether that knowledge can be found at all.

From the beginning of the drama, the ability to find truth through empirical means is called into question by the failure of its own method. Having been made aware of his daughter's

elopement with Othello, Brabantio acknowledges the limitations of the senses: "Fathers from hence trust not your daughters' minds ! By what you **see** them act" (1.1.172-73). Nevertheless, even Brabantio returns to empiricism as the foundation of knowledge, as is evident in the metonymic statement he makes to Othello concerning Desdemona's deception: "Look to her, Moor, if thou hast **eyes to see**. / She has deceiv'd her father, and may thee" (1.3.295-96).

Othello later tells Iago that "I'll see before I doubt; and when I doubt, prove" (3.3.196); however, he finds himself caught in an epistemological conundrum in which empirical knowledge is called upon to both justify mere suspicion and determine "truth." One could argue that Desdemona's handkerchief, having fallen into Cassio's possession as a result of Iago's scheme, serves as a "false index" of Desdemona's infidelity, thereby rationalizing Othello's jealous reaction. However, no "true index" of either her fidelity or her infidelity exists. Just as the circumstantial evidence against Desdemona cannot convict her, neither can her pleas for mercy and professions of innocence exonerate her. Having insisted that his suspicions be based on empirical evidence--"Give me the ocular proof"--Othello comes to realize that no amount of empirical evidence can provide the "truth" he seeks. Empirical evidence arouses suspicion, leading to further empirical investigation, which in turn only leads to more empirical investigation, never to "truth." The empirical signifier never leads to a signified, only to more signifiers. Meaning, truth, is always deferred, never present, and never found.

Unable to accept the idea that truth cannot be found through empirical methods, Othello seeks truth at its source, in this instance Desdemona. But when her testimony contradicts the "ocular proof," the empirical method completely breaks down. Desdemona's brutal murder is not an affirmation justice and truth, but the resignation to the fact that there is no justice, no truth. In the bitterly ironic final scene, Othello looks down at Iago's feet to see if they are cloven like the devil's, and exclaims "that's a fable" (5.2.294), realizing that his will to truth was destined to fail from the start.

Session 12B: Reading/Writing Electronic Culture (*Ardmore Room*)

Chair: Jay David Bolter, Georgia Institute of Technology

Making Film Stills for a Computerized Composition Course; Barry Jason Mauer, University of Florida - Gainsville

Which practices of "electronic writing" might best produce the effects of argumentality and critique (as means of persuasion, as modes of arranging information, as ways of understanding) across discourses? One approach employs "myth" rather than simply exposing it -- the film still. Inspired by Cindy Sherman's "Untitled Stills," posed photographs from imaginary movies, I designed a project for my class to learn the language of visual media, to exploit the features of electronic communications technologies for use within the liberal arts and sciences, and to test Roland Barthes' theories of the relation between photography and language.

The assignment calls for students to make the most legible images possible -- this means drawing on the codes of Hollywood, making use of genre and its sub-codes: setting, character, action, costume, props, lighting, style, acting, etc. Student photographers put themselves "in the shoes of" a Hollywood director, facing choices about how to make images most legible and suggesting additional information by selecting and combining relevant details (using the principle of metonymy; i.e. a hand of a monster suggests the presence of a whole monster).

The project requires students not just to make photographic film stills, but also to "read" each others' images. "Inner speech" supplies the missing information connecting the film still (necessarily a fragment) to a "whole" anecdote, composed of stock codes.
The web allows us to exhibit the film stills and respond to each others' work by means of a series of response questions to each film still, thereby testing the hypotheses of shared inner speech and the legibility of Hollywood codes.

Once we have explored the possibilities for common understanding of photographic images, we next explore the limits of meaning in photography, or what Barthes calls the "Third Meaning." I ask students to write a caption for their film still, typically in the form of a haiku, which identifies a signifier without a signified in their photograph. From this exercise, we learn that the signifier/signified relationship in photography is one of social convention rather than "truth."

Born Under Saturn: Anatomy of the Digital Melancholic; Marcel M.G. O'Gorman, University of Florida - Gainsville

> Deadening of affects . . . distance from the surrounding world . . . alienation from one's own body... [all] symptoms of depersonalization as an intense degree of sadness . . . in which the most insignificant thing, because a natural and creative connection to it is lacking, appears as a chiffre of an enigmatic wisdom in an incomparably fruitful connection.

Such is Waiter Benjamin's evaluation of Albrecht Durer's legendary engraving, *Melancholia I*. For Benjamin, the abysmal dejection of the winged figure results from the discrepancy between her earthly world of banal objects and a spiritual world of ideal images. It is the disillusioning unattainability of these images that causes the figure's hopeless descent into contemplative indolence -- thereby making of her an emblem of modernism. By drawing on Durer's engraving to illustrate his theory of nineteenth-century, *fin-de-siecle* melancholia, Benjamin is taking part in a tradition of diagnosis that spans five centuries of science, metaphysics, and art in the Western world. As it happens, not even the postmodern children of electronic culture are safe from the scourge of melancholia -- both as label and disease.

For nearly a decade now, we have been warned about an upcoming generation spawned from the electronic motherboard of interactive entertainment -- a youthful tribe of digitally-oriented beings commonly known as the *Nintendo Generation*. This is a stimulus-craving generation for which the video game replaces family interaction, supplants physical activity, and

renders intolerable the unstimulating chore of reading held dear by print-oriented *literati* for nearly five centuries. The Nintendo Generation is composed of misplaced, indolent, alienated *digerati*, born on the cusp of familial disintegration and global unification. In an ongoing search for solace, the *fin-de-millennium digerati* isolate themselves from external reality, and channel their mental and physical energies into an ongoing war waged against faceless opponents located at various nodes across a fibre optic playing field.

The Nintendo Child, rendered powerful before the video screen, has little chance of finding entertainment in the non-video world -- a world which is comparatively inert, dull, and which may not be altered by the flicking of hand-held digital prostheses. Whereas the video world is explosive, brilliant, hyperstimulating, the real world lacks lustre -- it is insipid, pallid, tiresome. We might even say that the prevailing mood of the Nintendo Child, aside from brief ejaculations of digital ecstasy, is melancholy. The symptoms of this condition, including fits of paralysis, self-absorption and mournful self-pity, are reflected in the most prominent arts of the era: in fashion for which black is the only rule; and particularly in music, where such self-piteous and mundane lyrics as "I'm a creep," and "I'm a loser," are the anthems of an entire generation.

Supplementing the scientific and literary genealogies of melancholia, this paper will act as an official diagnosis of digital melancholia. I shall illustrate the terminal nature of this condition as it is manifested in contemporary literature and popular culture. Finally, I shall explore causes and potential cures for digital melancholia, ultimately prescribing a series of pedagogical treatments that may be administered in the environment of the electronic classroom.

She Talks in Stereo; Michelle Glaros, University of Florida - Gainsville

[snap]
She Talks in Stereo represents the portion of my dissertation research which extrapolates from Cindy Sherman's art to generate a photographic approach to hypermedia composition. In this section of my project I consider how current approaches to hypermedia often subordinate image to language (or the hermeneutic impulse) at the cost of much of hypermedia's theoretical promise. In response I suggest that we reconsider our approach to hypermedia composition; rather than approaching hypermedia "scientifically" (by foregrounding language and interpretation) I advocate that we approach hypermedia artistically (by foregrounding image).
[snap]

I borrow the terms of this discussion from Robert B. Ray's book *The Avant-Garde Finds Andy Hardy*. For this project I am particularly interested in Ray's second chapter: "Snapshots: The Beginnings of Photography." Here Ray argues that although photography was initially thought of as a classification tool, the technology soon demonstrated a certain resistance to classification as the elusive (and unplanned) details of the image thwarted photographer's attempts to control the meanings of their shots. Ray explains, "By showing that every Spaniard was not dark, every banker not dull, photographs effectively criticized all classification systems and assured that any such system attempted in photography ... would inevitably appear not as science but as art."(30) In this sense, Ray's method of thinking about photography frames my way of thinking about hypermedia. That is, Ray uses the term "photography" broadly -- to suggest a sensibility, a means of making sense that leans toward accident rather than towards interpretation; in this context, I'd like to suggest that we think about what it means to think about hypermedia photographically.
[snap]

Thinking about hypermedia photographically pressures the promise of hypermedia. For instance, hypermedia's literary archive continually calls attention to the technology's postmodern and post-structural promise. Consider the seminal work of scholar George Landow. In Hypertext Landow suggests that hypermedia's foregrounding of the fragment and its re- contextualization literalizes the potential of much post-structuralist thinking. Experience, however, demonstrates that hypermedia technology alone is not enough to exploit the photographic potential of electronic literacy. Consider my experience with Kairos, a new online journal for web pedagogy.

Recently I produced a web version of the first chapter of my dissertation and submitted that web (Being in Pictures) to Kairos for review. Although my experience of the editorial process went rather smoothly, I continually met requests that I explain what I was doing with my web. That is, although the editors and reviewers praised my work and claimed they enjoyed screening it, they wanted me to include meta-commentary on my web. I believe this desire to make me explain arose on their part because while my web did include both a practical (an online syllabus) and a theoretical aspect (a more provocative series of screens which juxtapose text and image) it did not include any form of explanation from the side-lines. In short, Being in Pictures demonstrates rather than explains its way of working. The point I'd like to make today is similar to Ray's -- that foregrounding explanation subordinates image to language and thereby runs the risk of neglecting the vitality of electronic pedagogy.
[snap]

So how do we go about foregrounding the image with hypermedia? In my work I approach hypermedia photographically by adapting or extrapolating from two things: fanzines and Cindy Sherman's photography. From fanzines I garner a popular example of writing which highlights questions of design such as layout and graphics. Sherman's photography, on the other hand, shows me how to play with the traps into which our preference for interpretation leads us. I conclude She Talks in Stereo by presenting of the ways in which I use Cindy Sherman's photography as a tool for both teaching myself and my students how to compose hypermedia photographically.

Session 12C: Negotiating the Interface (*Brookwood Room*)

Organizer: Leo Chanjen Chen, University of California - Los Angeles

Putting Data on a Diet: Compression Technology and the Dream of the Weightless Body; Jerry Mosher, University of California - Los Angeles

This paper explores how the issues of obesity and "sizism" carry over into the computer-driven virtual world of simulated bodies, and how the literature of compression technology invokes the metaphor of the body as its marketing mimics that of dieting aids. Many computer users suffer from the "buffet syndrome": buying increasingly large storage devices and then filling them up with useless, free shareware and bulky programs. Excess data hinders mobility in cyberspace; obesity may be as disabling in the virtual world as it is in the real. Compression products provide the opportunity to gorge on information and still maintain a lean body of data. As such, they foster the myth of the weightless body and foods without calories: that one can have everything while consuming nothing.

As data storage devices expand from gigabytes to terabytes and bandwidth becomes an obstacle to delivery of information via the Internet, research has increasingly focused on data compression as an alternative to revamping the communications infrastructure. In the current literature on data compression, the metaphor of the body is repeatedly invoked, and the nomenclature of dieting is especially prevalent: computer users and programmers are urged to "slim down," and to strive for a "lean machine." These are phrases we are used to hearing everyday in advertisements for fitness centers and lowfat foods, reflecting Western culture's obsession with slimness, as dieters imagine foods without calories and bodies without weight.

The weightless body is of course an illusory ideal; the consuming population is becoming increasingly obese and is riddled with eating disorders. Many have found solace in the virtual world of cyberspace, where one can be reinvented in the simulated body, impervious to time and the laws of gravity. Nevertheless, the simulated weightless body is still governed by issues of size and strength: freedom of movement in cyberspace is dependent on the management of one's computer as a "lean machine." Excess data and weak or bulky applications hinder transfer rates and result in decreased mobility. Obesity and consumption disorders may be as disabling in the virtual world as they are in the real.

Dieting--whether it is controlling the intake of food or data--attempts to manage surplus. Compression applications, featuring names such as Stuff It, foster this myth with a "binge and purge" approach, suggesting that one can gorge on information and still maintain a lean virtual body.

Keywords: obesity, compression, diet, virtual body, cyborg

Transparency as Interface: A *petite histoire* of Its Tools; Leo Chanjen Chen, University of California - Los Angeles

This paper purports to examine the dynamics and implications of the notion of "language as interface" by tracing a genealogy of the concept of transparency as it is employed by various discourses. More specifically this paper foregrounds three usages of transparency and argues for a re-orientation of the "language mode" of meaning-making within our visual culture and digital discourses that might help to account for the perpetual negotiation of interpretation between the visual and the textual. These usages include transparency in architecture, transparency in language and transparency in digital media.

As Anthony Vidler suggests, modernity has been haunted by a myth of transparency: transparency of the self to nature, of all selves to society, universal transparency of building material, spatial penetration, and the ubiquitous flow of light and physical movement. Following

this genealogy, this paper attempts to redirect our over reliance on the perspectival-material visual cognition to the metaphoric assumption of transparency in language. Transparency here is defined as the convention in which both author and beholder are absent from representation, objects rendered as if their externals are entirely perceptible in a unified field of vision with their internality fully accessible. By linking architectural transparency to the transparency of language, I will then discuss how the metaphoric usage of transparency in digital media is broken down by the actual program application. Therefore, I propose to reconfigure a new epistemological paradigm in which to contain discourses of transparency in digital media and transparency of language. After all, transparency reveals as much as it hides.

Keywords: Transparency, architecture, language, visual culture, digital discourse.

Lessons in Space and Interface: Edifying a Cohesive Learning Environment; Tami M. Williams, University of California - Los Angeles

The development of the modern university system marks a dramatic change in the organization of space that has greatly impacted the mode of thinking that the earlier cloister system fostered. Modern universities are increasingly characterized by a fragmentation of both space and mentorship, and consequently of thought. Modern society encourages this pragmatic, Deweyean fragmentation which has quite thoroughly worked its way through the entire educational system. The importance of the spatial configuration of the monastery cloister system with its characteristics of *occlusivity* and *self-sufficiency*, and its role as a blueprint for the patterning of erudition or the mapping of knowledge, is most certainly that it lends itself to a *cohesiveness* of thought.

This paper explores how issues of *cohesivity, occlusivity* and *self- sufficiency* carry over from real life educational structures into the digital environment. What is being sought after here is a paradigm that will promote cohesivity and interaction over connectivity and interruption; indeed, a structural model that will facilitate the "processing" of data into knowledge.

The pertinent question then becomes how does this computer "netscape" shape our ways of thinking and learning linearly, logically, cognitively and linguistically? This paper reconsiders both the learning space of the middle ages with its emphasis on cohesivity and the possibilities it offers to the modern university campus and information inundated digital learning space for cohesive cognizance.

Keywords: cohesivity, learning space, interface.

Dials, Buzzers, and Beeps: Cinematic Antecedents of New Media Gadgetry; Scott Svatos, University of California - Los Angeles

Much pre-digital film and television represents emerging computer technology through collage sequences which create an impression of sophisticated machinery and abbreviate the complexities behind its operation. Details are juxtaposed in the form of important-looking dials and pumps, alphanumeric codes of uncertain significance, and abstractions of lights and beeps. This filmic device demonstrates a particular technoaesthetic which is both fascinated and repelled by gadgetry and mechanical complexity. Additionally, this collage technique has been integrated by various means into today's computer graphic interfaces.

By investigating this continuum, I describe not only how a lineage of formal properties has been maintained between cinema and the computer desktop, but how current interfaces have inherited traces of both the optimism and skepticism of their cinematic ancestors. The result is a distinctly gadgetized and infantilized interface--one which compresses uncomfortable amounts of information into user-friendly representational devices, such as windows, measuring sticks, simplified icons, and animated cursors. Ultimately, in this scenario, cinematic collage transcends its original role as representational device, and becomes a marketing tool of new technology.

Keywords: gadgets, cinema, collage, compression

Virtual Testimony: The Holocaust and the Authenticity of Digital Interface; Kevin Scharff, University of California - Los Angeles

This paper examines how the computer-based digital environment presents new challenges to representations of Holocaust testimony, especially as the flexibility of this new medium renegotiates conventional means of verification and historical record. The digital interface poses serious questions of authenticity and authority in engaging its audience. The stakes in communicating the events of the Shoah are considerable, and the veracity of testimony is subjected to new computer-generated manipulations, which ultimately disarm the meaning of such historical documentation. Yet, the strength of this new media is its flexibility in its presentation and storage capacity, both of which are vital in the continued recording and education of this historical moment. This paper evaluates the manner in which newly developing virtual museums, ranging from personal web sites to vast projects such as Spielberg's Shoah Foundation, are articulating Holocaust testimony and history through the digital medium. The valorization of this medium by Holocaust research institutes and scholars exacerbates the questioning of its functionality as testimony.

As Holocaust documentation increasingly turns to the digital world for the education of its audience, questions of authenticity continue to be raised Cyberspace and the world wide web in particular have begun to cultivate a paradoxical relationship with these forms of testimony, simultaneously enhancing and problematizing the function of the Holocaust as a unique historical event. Concerns over access, replication, and manipulation plague scholars with the issue of promoting vitality in educating a broad audience while maintaining a clearly defined historical account. Considering that Holocaust denial and hate group web servers outnumber legitimate sites roughly ten to one, it is important that issues of access be reevaluated. At the same time, the web has already produced extremely useful modes of representing the Holocaust, from virtual walk-throughs of concentration camps at Dachau to extensive art and photo galleries. The web allows many of these articles linked from all over the world to be accessed in a singular forum. This "layering" of documentation provides educational advantages over research conducted in either cumbersome, localized repositories or in individual testimonial accounts. Furthermore, the digital medium is providing a new, more accessible means of storing Holocaust testimony at high quality, while safeguarding the knowledge long after the last survivor has died. Thus, we must seize upon the advantages of this medium in recording and Preserving historical integrity, while understanding the fragile balance upon which its authenticity rests.

Session 12D: Technoscience and Film: From Heraclitus to Arnold Schwarzenegger (*Fulton Room*)

Chair: Blake Leland, Georgia Institute of Technology

A Natural History of Fire and The Ontology of Film; Blake Leland, Georgia Institute of Technology

"A Natural History of Fire" is a STC course I offer here at Georgia Tech. The core text for the class is Bachelard's *Psychoanalysis of Fire*, which explores the more or less unconscious affective charge that surrounds objects of technoscientific interest, in this case fire. Some of the other texts for the course are hymns to Agni from the *Rig Veda*, a number of philosophical fragments of Heraclitus, bits of the *Bible*, Goudsblom's *Fire and Civilization*, Carnot's *Reflections*, and a selection of Sergei Eisenstein's notes and drafts for an essay on Disney's animated films.

Eisenstein's essay on Disney is part of a life-long attempt to construct an aesthetic theory that could be applied to film. For Eisenstein, Disney's animated films are demonstrations of a kind of aesthetic affectivity -- a penetration into the realm "of profoundest sensuous thinking:" the unconscious. In the "true artwork," according to Eisenstein, this "sensuous thinking" exists in dialectical tension with a "rise along the lines of the highest conceptual steps of consciousness." Disney animations do not offer a full immersion in that aesthetic dialectic, but they do offer one of the purest experiences of one of its polarities. As Eisenstein explores his own fascination with animated film he soon finds himself discussing fire (and Agni, Heraclitus, Hegel, Gorky, and animism), and proposing a kind of philosophical, phenomenological identity between fire and animation. I think it may be plausibly suggested that much of what applies to animation applies also to film in general.

I use Eisenstein's essay in conjunction with Disney's *Aladdin* in order to help demonstrate the general plausibility of Bachelard's psychoanalytic approach to the technoscientific object -- to show that the sort of "sensuous thinking" that Bachelard uncovers in The Psychoanalysis of Fire is not simply the result of some sort of benighted primitivity, some pre-modern susceptibility to delusion. It is with us still, whether the object under consideration is fire, or film, or the telephone, or the computer, or the internet, or the automobile, etc.

A Distant Technology: Machine Age Science Fiction and *The Crazy Ray*; J. P. Telotte, Georgia Institute of Technology

> "Technology is our cultural-psychological dream of distance from matter."
> --Robert Romanyshyn

The Machine Age, that period stretching roughly from the turn of the century to the start of the Second World War, is a watershed for western culture. It marks, as Richard Guy Wilson offers, the coming "dominance of the machine in all areas of life and culture and the creation of that special sensibility informing" this century. Part of that "special sensibility," as Robert Romanyshyn has argued, is a sense of distance and detachment that increasingly informs the modern world. It is a sensibility that seems particularly prominent in the body of science fiction films that appear in this era, from the German *Metropolis* with its physical segregation of workers from the ruling class, to the Russian *Aelita* and its narrative about the long-distance effects of Martian technology on the Earth, to the English-German production *F.P. ! Does Not Answer's* tale of a flying platform set out in the middle of the Atlantic Ocean. The French production *The Crazy Ray* (*Paris Qui Dort*, 1923) similarly mirrors this connection between technology and distance in order to explore how we might react to a world that will inevitably be shaped by the technological.

In *The Crazy Ray* we encounter a scientist who has frozen all human activity in Paris via his remote control ray. The only ones who prove immune are those who had been in some way

airborn when the ray struck, in effect, those who had not been attached to this world. What the film explores is that possibility for remaining aloof, unattached, distant from this world in the face of a technology that seems, invisibly and inevitably, to reach everywhere. Rene Clair, the director, uses this trope of an "invisible ray" to sketch the reach of technology, the sense of distance it involves, and our human ability to confront and cope with its seemingly unpredictable influences.

Remembering the Body: Ideological Ambivalence in Total Recall; Robert E. Wood, Georgia Institute of Technology

Verhoeven's *Total Recall* (1990) confronts the viewer with a narrative of considerable ideological ambivalence. The film has the look of "smart" science fiction. It raises problems of identity, asserts the humanity of a mutant subclass, and vilifies a strawman interplanetary capitalist. The film's literary source, a Philip K. Dick short story, suggests a hallucinatory unfolding of reality. On the other hand, *Total Recall* invites the investment of both erotic and intellectual energy in the icon Arnold Schwarzenegger as fetish. Surrounding the figure is a kind of playground legend sexuality, which regresses to childlike innocence in a film in which penetrating the dome (of the Martian settlement) leads to certain death.

Total Recall seems in part the fulfillment of Baudrillard's proposition that the use of the body as a stage is disappearing. Certainly the film insists on "the fractal subject" with a protagonist who attempts to integrate experience with implanted memory and who contests his identity with an array of visual representations of himself. Replication seems to displace reproduction for much of the narrative. Yet the Schwarzenneger body insists on being a stage and resists the "ecstasy" of the hallucinatory narrative. Baudrillard has suggested that "the real itself appears as a large futile body." Against the grain of the narrative, the large futile body of Arnold insists on its reality.

From *Desk Set* to *The Net*: Women and Computing Technology in Hollywood Films; Carol Colatrella, Georgia Institute of Technology

A number of 1990s Hollywood films represent women who employ technological means to resolve romances. For instance, in *Sleepless in Seattle* (1993) Meg Ryan figures out by using a desktop computer equipped with Internet access and fax capabilities how to best approach the widower whose poignant appeal for female company has reached millions of radio listeners. By efficiently researching Tom Hanks' history and jetting off to find her subject, Ryan is able to find her man electronically and to pursue a romance that otherwise would have eluded her. Nora Ephron's film wittily entertains and persuades the viewer that various technologies (radio, film, and other forms of electronic communication) can enhance romantic desires in the Information Age.

Ephron's parents, screenwriters Henry and Phoebe Ephron, previously approached the subject of how computing technology encourages romantic possibilities in the classic Hollywood comedy *Desk Set*, starring Katherine Hepburn and Spencer Tracy and directed by Waiter Lang. The film's plot turns on two questions: will the new electronic brain personified as Emmy Emerac displace the "girls," the female reference librarians at the Federal Broadcasting network? and will the computer expert Tracy displace the network honcho (played by Gig Young) who has kept the head of reference (Hepburn) on a string for seven years? Because Young's character rises through the corporate hierarchy largely assisted by the intelligent and efficient Hepburn and because she is able to meet the verbal challenges offered by the eminently respected PhD played by Tracy, the viewer appreciates the value of Hepburn's affections by recognizing she is won over by the computer expert who engenders, nurtures, and admires the electronic brain. Hepburn's character wins a professional battle in proving that a reference librarian's skills are superior to the calculating abilities of the computer, and, therefore, that the computer can be only a useful adjunct and not a replacement for such "women's work." But the film ends on a strange note by indicating that the librarian will marry Tracy even though she fears, and he demonstrates in the final scene, that he will always "love" the computer more than he cares for her.

Such anxieties about how much an electronic machine can control human lives are given elaborate consideration in the 1995 film *The Net*, starring Sandra Bullock. Bullock's screen image as a plucky but ordinary young woman who manages to overcome every obstacle placed in her path, a role she plays in both *Speed* and *While You Were Sleeping*, supplies a lackluster film with some needed energy. Too many scenes in *The Net* are devoted to the chase: the ultimately unsuccessful cyberterrorists hunt down Bullock's character (a beta tester for a software company who has unfortunately stumbled on a virus and a plot to dismantle governmental authority) at an airport, on the beach at a Mexican resort, at sea, in the streets of Venice (California), in a car, at the software firm, at a computer show, and in the streets of San Francisco. The more interesting chase scenes in the film depict the technological search for Bullock and her concomitant research on the Praetorians; the cyberterrorists and the beta tester both access the Internet to determine what the enemy knows. The ideology backing up the cyberterrorists' plot, to hack into the various databases of the New York Stock Exchange, water and power authorities in Atlanta, Los Angeles Airport as well as confidential medical files, is not well-established in the film. Rather the viewer's attention is meant to engage quite specifically with the threat directed personally at Bullock's character: her identity, as it can be determined by the police, the US consulate, and her employer, is changed without her knowledge. She recognizes several times in her agonizing adventure that it doesn't take much for some hackers to figure out her personality profile (likes and dislikes, including habits), the extent of her personal property and responsibilities (she supports her mother, who has Alzheimer's disease in a nursing home), and her schedule, and to replace these details of her life with more lurid ones. A new name, arrest record, and family history are easily invented by one cyberterrorist as he drives after her. That this maniac has wooed her and made love to her before revealing himself to be a villain in cyberspace connects technology and romance in the most insidious fashion.

By examining how gender is defined in relationship to technologies of electronic communication in *Desk Set* and *The Net*. I will analyze how the conventions of romance and technological adventure affect changing ideas concerning women's roles in work and social relationships. The seemingly ideal romance engaged in by Hepburn and Tracy privileges women's work but at a cost, while the predatory stalking that Bullock is subjected to is a gendered nightmare embedded with references to AIDS and other sexually transmitted diseases. By outlining the different cultural codes of these films, I will describe a piece of twentieth-century women's history that has been elided until recently, the enabling and constraining of individual women and women's networks in relation to technological developments in computing.

Session 12E: Reading Racial Narratives in Science (*Georgia Room*)

Chair: Richard Cummings, John Marshall Law School

Portraying Racial Difference: Malvina Hoffman, Physical Anthropology, and the Field Museum of Natural History's "Hall of the Races of Mankind"; Marianne Kinkel, University of Texas - Austin

During the last twenty years, scholars from various disciplines have been considering how museums collect and exhibit objects. While these investigations have led to an analysis of the value systems at work in the presentation of cultural artifacts, few scholars address modes of display that are made or commissioned by museums such as replicas, dioramas, and mannequins. These exhibition forms present abstract ideas in a highly efficient manner and are not always dependent upon cultural artifacts. Employing an aura of scientific objectivity, they, in fact, construct value-laden descriptions of gender, class, and racial difference that reach large audiences.

In my presentation, I intend to discuss one such group of three-dimensional fabrications for Chicago's Field Museum of Natural History. In 1930, museum anthropologists commissioned the artist Malvina Hoffman to sculpt over 100 heads, busts, and full-size figures for the "Hall of the Races of Mankind." This exhibit was part of the museum's effort to create educational and entertaining displays for the 1933 Century of Progress Fair. Confusing accepted boundaries between aesthetic objects and scientific specimens, this anthropological exhibit disturbed established organizational practices at the museum.

I will consider how the sculptures popularized a typological view of race beyond the Field Museum through the circulation of replicas and photographic reproductions within diverse cultural arenas. For example, small scale replicas entered the collections of prominent art museums following a much publicized exhibition in New York. Educational textbooks, world atlases, and various popular magazines featured photographic images of the sculptures. Hoffman's- widely read travel account, *Heads and Tales* (1936) contained many photographs alongside a description of her experiences sculpting them in "exotic" lands. In tracing the circulation of the "Races of Mankind" figures, I will argue that a shared investment in naturalism and accuracy of detail enabled them to cross boundaries between anthropological, artistic, and mass cultural realms.

Jefferson and the Learned Smelfungus: Race and the Rhetoric of Science; Thomas L. Cooksey, Armstrong State College

> The smell of their sweat, the very texture of their
> skins, were mysteriously different from yours.
> -- George Orwell, The Road to Wigan Pier (1937)
>
> The learned SMELFUNGUS travelled from Boulougne to Paris
> -- from Paris to Rome -- and so on -- but he set out
> with the spleen and jaundice, and every object he pass'd
> by was discoloured or distorted --
> -- Laurence Sterne, *A Sentimental Journey* (1768)

Thomas Jefferson's use of scientific language to describe race reveals more about himself than his subject. Discussing the problem of race and racial difference in his *Notes on Virginia* (1782/1784), he draws on what he takes to be scientific evidence to suggest a natural difference between white and black. First pointing to the obvious matters of color and external form, he adds, "there are other physical distinctions *proving* a difference of race"[my emphasis]. Jefferson then writes, "they secrete less by the kidneys, and more by the glands of the skin, which gives them a very strong and disagreeable odor. " Explaining, he notes that this is related to the regulation of "animal heat,"

thus making them well adapted for hard labor in hot conditions. For Jefferson, racial difference seems incontrovertibly grounded in empirical scientific evidence.

Jefferson's appeal to the language of natural philosophy covers a contradiction in his moral philosophy. An examination of his scientific sources, especially Adair Crawford's *Experiments and Observations on Animal Heat*, as well as the accounts of smell in Locke, Reid, Buffon, and Condillac do not sustain his conclusions. Further, theories of moral sentiment, such as those found in Laurence Sterne's *A Sentimental Journey*, a hook deeply admired by Jefferson, point to the subjective nature of smell. What drives Jefferson's judgments is something more personal than he either understands or is willing to admit to himself. As George Orwell noted, "no feeling of like or dislike is quite so fundamental as a physical feeling. Race-hatred, religious hatred, differences of education. or temperament, of intellect, even differences of moral code, can be got over; but physical repulsion cannot. " In *A Sentimental Journey*, Sterne's Mr. Smelfungus visits Europe. "He wrote an account, but 'twas nothing but the account of his miserable feelings." In a similar fashion, Jefferson's "scientific" account of race is more an expression of his own feelings.

The purpose of this paper is to examine Jefferson's "scientific" account of race, especially in relation to odor and smell, and to situate this against eighteenth-century theories of smell and sentiment in order to reveal his unacknowledged assumptions.

Scientific Rac(ial)ism and the Construction of Resistant Agency; Erik Yuan-Jyan Tsao, Wayne State University

Waiter Benn Michaels's essay, "Race into Culture," attempts to intervene and interrogate the genealogy of cultural and racial identity. Unfortunately, Michaels, in his attempt to be anti-essentialist, detaches history from the more materialist conception that history is made by human beings. However, I contend that these different knowledges, histories and ideologies, are imbricated and antagonistic. These different knowledges, which are constructed to legitimate and delegitimate a dominant social structure, produce a subjectivity which resists legitimating knowledges (for example, scientific race theory, which legitimated not only slavery, but the segregation of Blacks from Whites). This is what I shall call a resistant agent.

The idea of resistant or oppositional agency is clearly stated by Abercrombie, et al., in their review of Göran Therborn's *The Ideology of Power and the Power of Ideology*. Therborn argues that a dominant knowledge/ ideology is usually resisted by the counter-knowledges/ ideologies of subordinate classes. These counter knowledges/ ideologies arise in opposition to the dominant one. The theoretical aims of this paper, then are to illustrate "how [the production of a resistant or oppositional agency out of a confrontation with a particular knowledge/ideology] comes about and... under what conditions resistance prevails... (Abercrombie et al. 154)"

Following from this argument, I examine the confrontation of the different Pre-Darwinian scientific racial theories (polygenism, monogenism, miscegenation) and their use by several writers to construct a "theory" of resistant agency. I discuss the use of monogenist theory/ideology--as explicated by Samuel Stanhope Smith's *An Essay on the Causes of the Variety of Complexion and Figure in the Human Species*--by Harriet Beecher Stowe in *Uncle Tom's Cabin* to combat the more explicitly racist, polygenist theory/ideology. (Given the work already done by George Fredrickson, and others, on this topic, I only spend a little time looking at this issue.) I also examine how Frances E. W. Harper uses the theory of miscegenation--through D. G. Croly's *Miscegenation*-- to radically critique the racial categories of segregationist policies. Finally, I investigate how Anna Julia Cooper's revolutionizes all the previous discourses on scientific rac(ial)ism in order to call for the, what we might call, educative social construction of a resistant black agency via a nationalist ideology. In other words, she moves away from biological conceptions of race to a more nationalist and culturalist conception of identity.

From this more nationalist-culturalist conception of an oppositional agency, which is formed in opposition to a dominant scientific rac(ial)ist discourse, come the rudiments of black intellectual consciousness. Using Gramsci's theory of the formation of intellectuals, I conclude the

essay by drawing out the implications of the work of these writers (Harper and Cooper in particular) to construct this early form of black intellectual consciousness. Finally, I argue for the need to examine the historical-material (social, economic and otherwise) bases for the development of this intellectual consciousness, and consider some of the recent work by African American historians to trace this development.

Session 12F: The Arts and the Sciences: Bridging the Partial Ontologies (*Piedmont Room*)

Organizer: Koen DePryck, Institute of Knowledge Management

Participants: Koen DePryck, Institute of KnowledgeManagement
Karel Boullart, University of Ghent
Paul Wohlmuth, University of San Diego
Elke DeBelder, Institute of Knowledge Management
Joseph Carroll, University of Missouri - St. Louis

Unless one is prepared to give up on all possible reference of human language to reality, what can be "said", expressed and/or communicated about the world and its entities *especially man himself* by any epistemic subject of necessity stands in an onto-epistemic relation to reality as far as it is accessible. All knowledge, scientific, artistic or other, is as much about the world as it is of the world.

The underlying process of self-reference is discussed from the point of view of the participants. Can we claim that within the "language" used to express reality "discursive thinking", and consequently science in the strict sense, is a highly special case of a much wider set of "languages" that give rise to different media of expression and communication which are the basis of the "arts" as traditionally conceived? If so, we might be able to propose an ontological basis, first, for the fundamentally unitary nature of art and science, and, second, for their inevitable bifurcation into two distinct kinds of "knowledge."

Sunday, October 13, 11:45 - Noon: Refreshments (*Habersham Room*)

Sunday, October 13, Noon: SLS Wrap-Up Session (*Habersham Room*)

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